

# IN THIS ISSUE

**STEEL**  
The  
Metalworking Weekly

December 30, 1957  
Vol. 141 No. 27

## METALWORKING OUTLOOK

- 19 Home laundry appliance sales in 1958 expected to continue at high though not at record level

## EDITORIAL

- 23 It's time to sell sensibly

## COVER ARTICLE

- 25 What Euromarket will mean—Six-nation common market starts Jan. 1 in Europe amid sales and fiscal problems



- 27 Steel production increases in Russia—Doubles in seven years

- 28 Trend to LP-gas continues—Crop dryers are a growing summer market

- 29 Scrap prospects for 1958 and review of 1957

- 30 Scrapped auto burner takes a bow

- 31 The missile business—How Bell & Howell gets into it



- 35 Salesmen—How do you know if you have enough?

- 52 Research develops lighter and stronger metals—Review of '57 advances

## TECHNICAL OUTLOOK

- 55 New family of materials to appear over next 25 years will be based on intermetallic compounds



- 56 New way to measure quenching speed developed by GM process team

- 62 Progress in steelmaking—Jones & Laughlin joins oxygen steelmakers



- 65 One machine anodizes many colors—Only one operator is needed

- 68 Steelmen view standards—Movement underway to standardize improved specifications, but agreement will take long time

## MARKET OUTLOOK

- 77 Yearend roundup—Indexes and composites, 80; steel prices, 81; scrap trends, 87, prices, 88



- 78 Aluminum growth hits snag—Deliveries of mill products are off about 5 per cent. Capacity exceeds demand for the near future

- 90 Nonferrous metals—Prices, 92

## REGULAR FEATURES

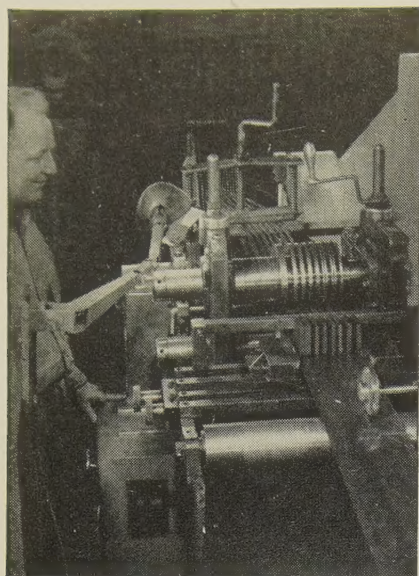
- 6 Behind the Scenes  
10 Letters to the Editors  
16 Staff  
32 Windows of Washington  
39 Mirrors of Motordom  
43 The Business Trend

- 47 Men of Industry  
50 Obituaries  
60 Machine Topics  
71 New Products  
75 New Literature  
95 Advertising Index

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## YODER SLITTERS Supply Varied Strip Widths for Tinnerman *Speed Nuts*®

Tinnerman Products, Inc., Cleveland, Ohio, produces more than 10,000 different shapes and sizes of "SPEED NUT" brand fasteners for industry... many of them to special specifications.

To do this, Tinnerman uses slit steel strands ranging in width from  $\frac{1}{8}$ " to  $7\frac{1}{2}$ ". To carry an inventory of the many strip widths required to meet normal and unusual demands would be almost impossible.

Tinnerman overcomes these inventory and supply problems by doing their own slitting on two Yoder slitters. This enables them to supply the plant with any strip size required from a relatively small inventory of 6" and 9" width purchased coils. In slitting narrow strands, such as these from small coils, a Yoder slitter may be profitable on a production as low as 25 tons per month.

Here is a fine example of how a small investment in Yoder slitting equipment greatly simplifies and speeds production while effecting important operating economies.

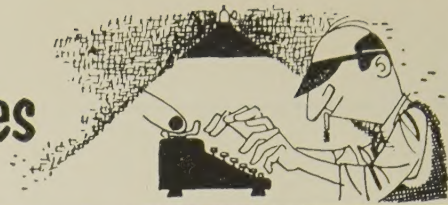
The saving made in time alone, reflects in better customer service through faster completion and delivery of finished products.

If your steel strip or sheet slitting requirements are as low as 100 tons per month or even less, a medium size Yoder slitter can be a very profitable investment for you. The Yoder line includes units of every size and capacity... of the most advanced engineering design. Send for the Yoder Slitter Book—a comprehensive text on the mechanics and economics of slitters and slitting line operation, with time studies, cost analyses and other valuable data. Write to:

**THE YODER COMPANY**  
5502 Walworth Avenue • Cleveland 2, Ohio



## behind the scenes



### Happy New Year!

Two more days to go, and then we'll be into 1958; it just doesn't seem possible. Two more days to repent, and make good resolutions, and love your enemies, and do good to them that spitefully use you—and then right after New Year's we can all be stinkers again. Because folks have been fiddling with our calendar, New Year's is off about ten days. Our personal ancestors were Druids, and they didn't fool around with dates. As soon as the earth had tilted to its northern maximum away from the sun, the head Druid let out a shout and said: "Boys, this is it! The old year is done, and a new one is about to begin!"

If the winter solstice was good enough for our folks, it's good enough for us, so you see, as far as New Year's is concerned, it's done come and gone... and according to our religion, 1958 is already a week old. This would be a splendid time to gather up all the loose ends, thank all the patient souls who put up with our nonsense, and wish all non-Druids a happy and prosperous New Year.

### From the Grab Bag

Nathaniel Clark Reed, 1110 Palmer Ave., Winter Park, Fla., used to be vice president in charge of sales for the Wheeling Steel Corp. After he retired, he wrote to STEEL: "I thought that the *Wall Street Journal* and the *New York Herald Tribune* would give me adequate information on what was going on in the steel industry. I was wrong. Please enter my subscription... After 40 years with Wheeling Steel, I am on a metallic retirement: STEEL in my heart, SILVER in my hair, a little GOLD in my pocket, and just loads of LEAD in my pants."

Mention of the *Wall Street Journal* suggests a clipping from that highly esteemed paper dated Oct. 2, 1957. The *Journal* reported that back in 1749 a Frenchman arrived in Boston and placed an ad in the July 3 issue of the *Boston Independent Advertiser*. For those of you who haven't read the item (in 1957, of course) here it is in part:

"Sieur Roquet sells all sort of arms,

legs, eyes, noses or teeth, made in the genteelest manner, and as now worn by persons of rank in France. He also cures effectively the most stinking breaths by drawing out and eradicating all decayed teeth and stumps, and burning the gums to the jawbone without the least pain or confinement; and putting in their stead an intire sett of right African ivory teeth, set in rose-colored enamel, so nicely fitted to the jaws that people of the first fashion may eat, drink, swear, talk scandal, quarrel, and show their teeth without the least indecency, inconvenience, or hesitation whatever."

Anybody for an extraction by Sieur Roquet? Honest, it won't hurt.

The Gulf States Utilities Co., New Orleans, recently found itself in an embarrassing situation: It was obliged to declare war on woodpeckers. They were chewing holes in transmission line poles, so the utilities people asked the Stone & Webster Engineering Corp. to do something about it. S&W came up with jackets of steel mesh, to be wrapped about the poles 20 ft above the ground and higher. The woodpeckers aren't interested in anything below 20 ft, so after they dented their bills, they all flew away, and now everybody is happy. Ah, well, things won't be the same anymore in the Atchafalaya Swamps.

### Bird or Spirit?

Associate Editor Sam Samford masterminded the cover story this week (Page 25). He went to the German Consulate in Cleveland, wheedled a beautiful 5-ft map of Germany from the consul, and gave it to artist Tom Bryan for cover purposes. Tom selected a small decorative eagle from the border design ignoring the other 20 sq. feet of map, and that's the gloomy critter you saw on the cover a moment ago. Brings to mind a streamlined version of the raven that sat on the bust of Pallas just inside the chamber door, only that and nothing more.

*Shradu*

(Metalworking Outlook—Page 19)



# times as fast with **BOXES**



## Prominent truck axle maker saves 7 to 10 man-hours per load. Reduces storage space requirements as much as 66%.

Eaton Manufacturing Company's Axle Division was faced with a costly and time-consuming problem of unloading and sorting a variety of suppliers' parts shipped in bulk form via truck. Unloading and handling time was running as high as 7 to 10 man-hours per truck.

Eaton Axle Division Industrial Engineers, after reviewing several types of boxes, decided on the use of Republic's exclusive PB-127 Collapsible Box and Skid Units. Accessories were specifically engineered to Eaton's requirements.

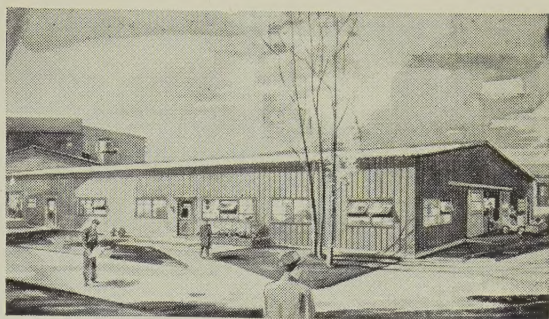
Eaton furnishes its suppliers empty boxes in the collapsed position—the collapsible feature substantially reduces transportation costs on the shipment. The supplier sets up the boxes, fills each with a specific size and type of part and returns them to Eaton. The result? Ten trucks can now be unloaded in the time it formerly took to unload one.

But the saving in time, sorting, and transportation is only part of the story. The PB-127 Collapsible Box is a real space-saver. It's designed to save as much as 66% of the space used by a non-collapsible box. It can be tiered when loaded or empty—collapsed or set up. The PB-127 is built for heavy-duty service. It is a one-piece unit. All parts are permanently attached. A pin and slide bolt arrangement assures positive locking in the set-up position.

Republic Collapsible Steel Boxes are made in a wide range of widths, lengths and heights to meet your requirements. Or if you have a special handling problem, Republic engineers will help you design a unit to fit your plant operation. The coupon will bring you more facts by return mail.

# STEEL

*and Steel Products*



**FAST ON-SITE ERECTION** with Truscon's new "Budget Buildings". Simplified design brings the cost down low. It's a quality steel building with a tight, dense, galvanized coating that's more rust-resistant than ever. No painting needed. Your "Budget Building" order will be filled fast from off-the-shelf stocks. Immediate delivery in widths of 32, 36, 40, 44 and 48 feet... 12- and 14-foot heights... lengths as long as you want them. Send coupon for details.



**SIMPLIFY HANDLING, STACKING AND PALLETIZING** of bulky, uneven, odd-lot and fragile materials with Republic Steel Pallets and adjustable Pallet Racks. Tubular steel supports on racks adjust every six inches to handle palletized material of any height. Two-way entry permits loading and unloading from either side. Select single pallets from any level without restacking. Mail coupon for specifications and quotations.

### REPUBLIC STEEL CORPORATION

DEPT. C-423C R

3120 EAST 45th STREET • CLEVELAND 27, OHIO

☐ Send more information on Republic Collapsible Boxes.  
☐ Have a Materials Handling Engineer call.

Send me more facts on

☐ Truscon "Budget Buildings"

☐ Pallet Racks

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

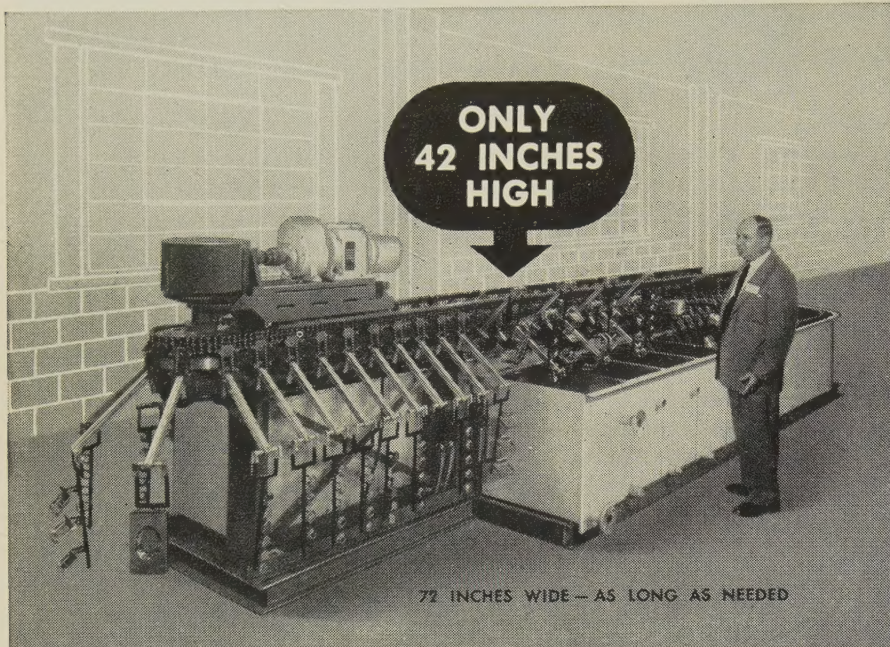
Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



# MEET "LITTLE STEVE"

NEW SPACE SAVING, LOW COST  
UNIT WITH AUTOMATIC  
LOAD AND UNLOAD



Here's  
What  
"LITTLE  
STEVE"  
can do  
Automatically

**ELECTROPLATING**  
**ANODIZING**  
**BLACK JAPANNING**  
**ENAMELING**  
**ELECTROTYPE PLATING**  
**PLASTIC COATINGS**  
**BRIGHT DIPPING**  
**PHOSPHATE COATINGS**

**UP TO 40,000 PIECES PER DAY**  
**540 RACKS OR ARMS PER HOUR**

Yes, this new immersion processing machine by Stevens can process up to 40,000 pieces per day — and it has a variety of other uses too.

Ruggedly built, "Little Steve" can be obtained at a surprisingly low initial cost. It is ideal for large or small companies for it will fit many production cycles. It uses an arm as a rack or will take racks for small parts.

Being of small size it offers no floor space or load problems; involves low solution expense and means a small capital investment. It can be used easily as a laboratory testing machine.

For further information about "Little Steve" write for illustrated folder or call your local Stevens sales engineer.



WAREHOUSES AND OFFICES  
IN PRINCIPAL CITIES

## LETTERS TO THE EDITORS

### Timely and Potent

I have thoroughly enjoyed the timely and potent articles in your 1957 Program for Management. I would appreciate two sets of the ten articles for my library.

V. L. George  
Capitol Steel & Iron Co.  
Houston

### Short Run Dies Solve Problems

We would appreciate receiving three copies of your article, "Short Run Dies Offer Long Life," as published on Page 94 of the Dec. 2 issue of your excellent magazine.

Carl F. Carlstrom  
President  
Carlstrom Pressed Metal Co. Inc.  
Westboro, Mass.

### Electronic Facts Helpful

I found the facts and estimates in the story, "Unbridled Electronics" (Nov. 25, Page 60), helpful. We could use three copies for the electronics unit of our curriculum.

C. F. Muncy  
Member of the faculty  
Industrial College of the Armed Forces  
Washington, D. C.

### New Products and Markets



In the Dec. 2 issue, you carry two articles, "Growing the New Products" (Page 64) and "Growing the New Markets" (Page 65), in which we have an interest. We would appreciate two reprints.

K. F. Braeuninger  
Manager, Extrusion Plant  
Madison Div.  
Dow Chemical Co.  
Madison, Ill.

I would appreciate 15 copies of each of these two articles.

D. F. Jurgensen  
Vice President-Development & Research  
Blaw-Knox Co.  
Pittsburgh

### Trend to Stainless Steel

May we please be favored with six copies of your excellent Trends-in-Metals article, "Stainless Steels" (Nov. 4, Page 107).

George T. Fraser  
Western Regional Sales Manager  
Crucible Steel Co. of America  
Los Angeles

### Article to Members

May we have 20 reprints of the splendid article, "How To Give Powdered Metals Strength" (Nov. 25, Page 110). The Powdered Metals Div. of Eaton Mfg. Co.—prime authority for the story

(Please turn to Page 12)



Precision high-carbon strip steel with  
uniform thickness, finish, and grain structure  
to meet today's exacting design  
and fabrication requirements.



**Wallace Barnes Steel Division**

# **ASSOCIATED SPRING CORPORATION**

**General Offices: Bristol, Connecticut**

**World's Largest Manufacturers of Precision Mechanical Springs**

**CONVENIENT MANUFACTURING DIVISIONS Coast to Coast**

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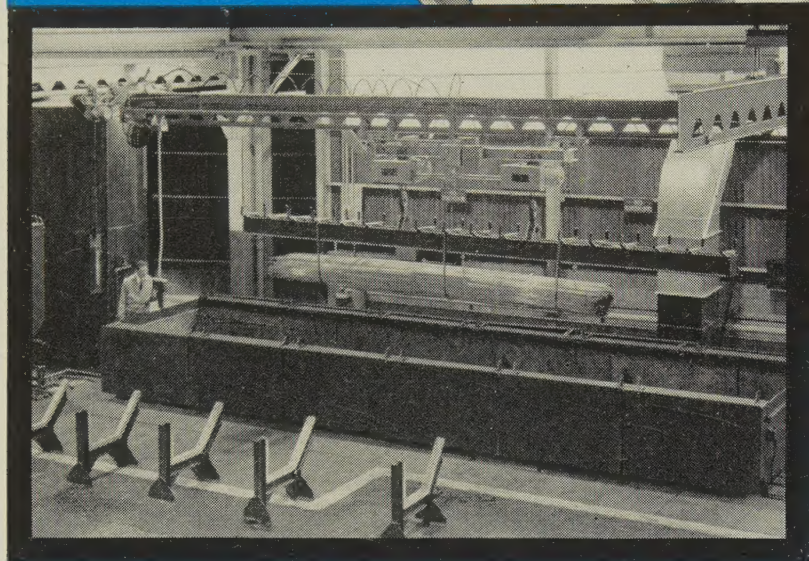
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Bristol, Connecticut

**F. N. MANROSS AND SONS CO.**  
Bristol, Connecticut

**THE WALLACE BARNES CO., LTD.**  
Hamilton, Ontario, Canada



# A report from Chase Brass & Copper



**Production up/costs down**

With New **DETREX**

**PERM-A-CLOR® NA**

(TRICHTHLORETHYLENE)

When specifications are set down by a customer they must be met. CHASE BRASS & COPPER CO. has met them in manufacturing straight-length copper tube for air conditioning and refrigeration units, using new DETREX Perm-A-Clor\* NA.

In making copper tube, customer specifications state that inner surface residue must not exceed two mg. per square foot. A DETREX Degreaser was installed in which new DETREX Perm-A-Clor\* NA (Trichlorethylene) is employed as the solvent. With this installation, residue can be reduced to 0.5 mg. with the work coming through clean and bright.

In men, methods, materials and machines—in every phase of metal cleaning and processing—DETREX shows the way to increased production and profit. Let your DETREX representative show you why DETREX, pioneer in the field, is today the recognized leader.

\*Perm-A-Clor is the registered trademark of

**DETREX CHEMICAL INDUSTRIES, INC.** BOX 501, DEPT. S-901, DETROIT 23, MICH.

## LETTERS

(Concluded from Page 10)

—is an active member of this association.

We know that while most association members read STEEL, our supplying them with this reminder reprint will be a helpful service.

Winfield L. Redding  
Public Relations Director  
Powder Metallurgy Parts  
Manufacturers Association  
1 Gateway Center  
Pittsburgh

### Partmaking Method

The article, "Swagers Point, Form, Assemble" (Dec. 9, Page 157), has been read with interest. Could we obtain six copies for distribution among our personnel?

Peter Hansen  
Engineering Dept.  
Aero Research Instrument Co. Inc.  
Chicago

### Data on Attitude Surveys

Please send a copy of your fine article, "Give Employees Their Say" (Dec. 9, Page 116).

J. A. Dahl  
Purchasing  
Structural Steel & Forge Co.  
Salt Lake City, Utah

### Make or Buy Problems

Please send three reprints of the Program for Management article, "Make or Buy?" (Oct. 14, Page 105). It appears to be an excellent summary of factors that should be considered in make-or-buy decisions.

Cecil L. Wilder  
Manager  
Machine Manufacturing Div.  
Haloid Co.  
Rochester, N. Y.

### Tape Control Interests Reader

We have read with great interest the article, "Making Tape Control Work" (Nov. 18, Page 182). We would appreciate three copies.

E. A. Bowden  
Chief Engineer  
Magna Mill Products  
South Gate, Calif.

### Copies for Reference

Please send me reprints of the ten articles in your 1957 Program for Management. They are all interesting. I would like to make a permanent grouping of them for future reference.

B. H. Goldbeck  
Engineering Manager  
O. Ames Co.  
Division of McDonough Co.  
Parkersburg, W. Va.

### British Strip Width Gage

In the Technical Outlook of Dec. 2, there is an item headed, "Edge Measure" (Page 93). It refers to a British gage which measures the width of a strip passing through a mill. Please let us have information on this unit.

L. C. Teague  
Purchasing Agent  
Tennessee Coal & Iron Div.  
United States Steel Corp.  
Fairfield, Ala.

• The gage was developed by the British Iron & Steel Research Association, 11, Park Lane, London, W. 1, England. It is covered by British patent application No. 27651/54.



December 30, 1957

## Laundry Appliances To Gain

Look for makers of laundry appliances to sell 5,370,000 units in 1958, compared with 5,308,000 in 1957. The American Home Laundry Manufacturers' Association points out that the two years will rank as third and fourth highest. Here are forecasts for appliances (1958 vs. 1957): Automatic washers—2.9 million, vs. 2.8 million; automatic clothes dryers—1.5 million, vs. 1.3 million; automatic ironers—45,000, vs. 46,000; washer-dryers—250,000, vs. 180,000; wringer washers—850,000, vs. 898,000.

## Warm Prospects for Air Conditioning

Industry-wide sales of air conditioning equipment in 1958 may be slightly higher than they were in 1957, predicts Trane Co., La Crosse, Wis., air conditioning and heating equipment maker. Sales in 1957 surpassed 1956 totals by about 4 per cent. Here are market-by-market predictions: Office buildings—moderate increase; industrial—greater percentage of new factories will be cooled in '58, but fewer will be built than in '57; small commercial—no change; institutional—3 per cent gain; residential—slight gains. A big potential is in our 35 million one-family homes—less than 2 per cent are centrally air conditioned.

## Steel Ingots in '58: 110.5 Million Tons?

Market analysts for 16 major steel companies have widely varying steel ingot predictions for 1958, but the average is 110.5 million tons. That would compare with an ingot production of 113 million tons in 1957, 115.2 million in 1956, and 117 million in 1955, the record. Ingot capacity will probably be officially pegged at about 141 million tons on Jan. 1, compared with 133.5 million a year ago.

## Steelworkers Get 5-Cent Escalator Raise

Steelworkers will get a 5-cent cost-of-living wage increase beginning Jan. 1 because the consumer price index climbed to 121.6 per cent of the 1947-49 average. That's 2 points higher than last May 15's index, on which the last escalator adjustment was based. Some 780,000 workers in steel and related industries get the extra nickel. The escalator clause gave steelworkers 4 cents more beginning last July 1 and a 3-cent hike last Jan. 1.

## Armco To Acquire National Supply

Armco Steel Corp., one of the few major steel companies not heavily in the pipe and tube business, will get a firm grasp on the market when stockholders approve a merger with National Supply Co., Pittsburgh. The move benefits National Supply, too, because it must go to the open market for steel. Its ingot capacity, concentrated in three electric furnaces, at Tor-



# Metalworking

## Outlook

---

rance, Calif., totals only 50,200 tons annually. It needs raw steel for its plants at Ambridge and Etna, Pa., which can turn out 712,200 tons of pipe and tubes yearly. National Supply also makes and distributes oil field machinery. Armco plans no changes in policies, personnel, or products of National Supply when it takes over.

### **Increase for Air Control Valves**

Watch for at least a 10 per cent increase in the production of air control valves for industrial applications in '58. Ross Operating Valve Co., Detroit, estimates that 700,000 valves (not counting midget varieties) were made in 1957 and predicts a 1958 volume of about 800,000.

### **Industrial Rubber Outlook Good**

The nontire segments of the rubber industry will consume 582,000 tons of rubber in 1958, 38 per cent of the country's total consumption. The dollar sales volume of nontire rubber products, says Hewitt-Robins Inc., Stamford, Conn., already exceeds that of tires and should continue to grow at a faster rate because of the development of new products and increased usage of standard items such as belting, foam rubber, and industrial hose.

### **Tool Builders Demur on Building-Block Idea**

Don't expect the machine tool industry to take a strong stand on the building-block issue (STEEL, Nov. 4, p. 67). Although many builders don't like the attempt to standardize mounting dimensions on machine components, they don't intend to make this an official industry position. In a closed Washington meeting this month, a committee of the National Machine Tool Builders' Association decided on a hands-off policy. One question some builders have raised: What are the antitrust implications if the U. S. seeks to standardize designs of competitive products?

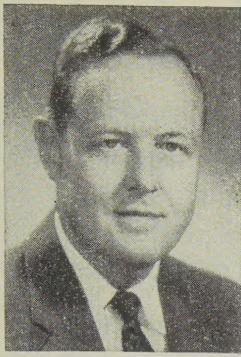
### **Executive Development Courses Double**

Here's a measure of industry's growing interest in executive development: In 1954, 15 universities offered 17 development courses. Today, twice as many courses are being offered, and there's no evidence that the saturation point has been reached, says National Industrial Conference Board.

### **Straws in the Wind**

The Air Materiel Command has contracted with Brush Beryllium Co., Cleveland, for the development of manufacturing techniques to produce sheet beryllium. It's for airborne weapon systems . . . Purchasing executives surveyed by National Association of Purchasing Agents predict that the downward drift in general business will continue through the first half of 1958 . . . Welded wire fabric shipments next year should equal or slightly surpass 1957 levels, says the Wire Reinforcement Institute.





December 30, 1957

## It's Time for Sensible Selling!

The high level of industrial activity and the pressure for both capital and consumer goods since World War II have practically destroyed what we call sensible selling.

With ever-larger sales goals, there has been too much emphasis on price cutting, undercover concessions, and whatever else was necessary to take an order away from a competitor.

Sheer volume has made it possible for most companies to show a profit in their profit and loss statements. But too often these consolidated statements conceal the fact that profitable products are absorbing the losses of those unable to pay their own way.

Since industry is being squeezed even more by rising labor costs and shrinking sales volume, there is every reason for the resurrection of sensible selling which is based on facts.

Cost analysis is an effective approach. Its purpose is to determine unit costs in terms of each product. It involves the calculation of direct unit production costs, the allocation of administrative and overhead costs, and the addition of distribution costs.

The problem is one of setting prices that are fully competitive. They must recover the unit cost of production at different levels of operation, provide funds for replacement and expansion of facilities, and appeal to customers as well.

Setting the right price is only one step in the right direction. The real trouble starts at the distribution level, or the point where the product leaves the plant. More and more market experts are adopting distribution cost analysis so that such items as salesmen's salaries, office salaries, traveling expenses, bad debts, and shipping costs may be properly charged against each product or product line.

Placing charges where they belong can suggest a lot of cures for many sales problems. Perhaps it would be better to pass up small orders entirely or turn such business over to distributors. Perhaps sales people should be paid on the basis of profit contributed to the business and not a commission on sales. Perhaps the marketing setup is due for a complete overhaul.

One thing is certain: There is plenty of room for improvement. The first thing we must do, in our opinion, is return to sensible selling.

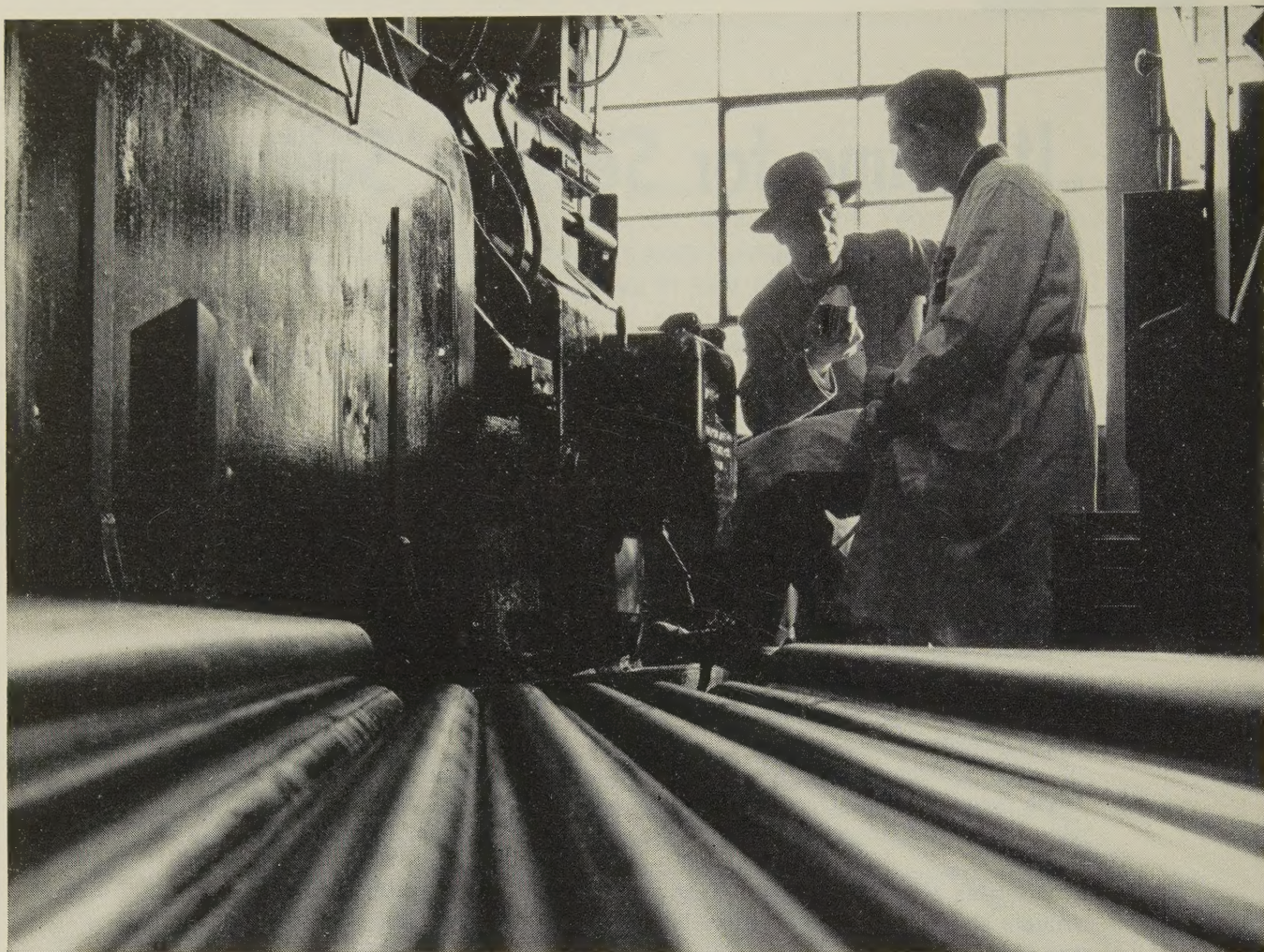
*Irwin H. Such*

EDITOR-IN-CHIEF



# Inland Ledloy\*..the original leaded steels

Twenty years ago they said it couldn't be done. But Inland tackled the problem—discovered how to add lead to steel and produced the world's first commercial leaded steel in Inland furnaces. Since then, further research and refinement has been unceasing—each new Inland technical development providing still greater production possibilities for the metalworking industry. Due to constantly improving product quality, Ledloy steels today set the standards by which all other free machining steels are compared.



This metallurgist is helping one of Inland's customers get the maximum benefits from Ledloy—the world's most machinable steels. As an expert, backed by Inland's many years of experience with leaded steels, his advice often results in better finishes, closer tolerances, reduced machining time or increased tool life for Ledloy users.

Men like this who had a part in Inland's pioneering and developing of leaded steels, have literally grown up with Ledloy. Through the years they have worked closely with users in hundreds of applications. Experience such as this cannot be matched.

## Experience makes Inland Ledloy better

*INLAND LEDLOY is sold in cold drawn form, under various trade names, by leading cold drawers and steel warehouses from coast to coast.*

**INLAND STEEL COMPANY** 38 South Dearborn Street • Chicago, Illinois  
Sales Offices: Chicago, Milwaukee, St. Paul, Davenport, St. Louis, Kansas City,  
Indianapolis, Detroit, New York • \*registered trade name of Inland Steel Company,  
pioneer in the development of leaded steels.





## FOREIGN OUTLOOK for 1958... No. 4

### West Europe Steel Developments by 1960

(As forecast by American Iron & Steel Institute)

1. Steelmaking capacity will increase to 122 million net tons, compared with 96.5 million tons in 1957.
2. Exports of end products containing steel will increase 40 per cent above 1955 levels.
3. Consumption of steel in some industries will increase as much as 90 per cent above 1955 levels.
4. Steel exports will be 20 per cent above 1955's.
5. Imports of raw materials will increase above 1955 levels: iron ore, 70 per cent; coal, 20 per cent; scrap, 60 to 70 per cent.

# What Euromarket Means

Amid sales and fiscal problems, six-nation Common Market starts Jan. 1 in Europe. Members are Italy, France, West Germany, Belgium, Luxembourg, and the Netherlands

WESTERN EUROPE this week takes a long step toward integration and unity.

The six-nation Common Market will be born on Jan. 1 (STEEL, Apr. 8, p. 69). Italy, France, West Germany, Belgium, Luxembourg, and the Netherlands will pool their resources, production, and labor forces; they will eliminate tariffs among themselves and adopt a common import duty for the rest of the world. The result of years of negotiation, the Euromarket treaty provides for those aims to be realized in 17 years. Import

duties will be averaged or "harmonized" by Jan. 1, 1959.

**Atomic Pool**—Along with Euromarket, the Euratom treaty goes into effect for the six nations. It provides for a common effort in research and development of atomic energy for peaceful pursuits.

The fuel shortage resulting from the Suez crisis gave impetus to the Euratom treaty, which was ratified by the member nations much faster than the Euromarket treaty. The aim: To supplant imported oil and coal with nuclear-generated electric power and relieve Eu-

rope from dependence on the rest of the world.

**Prototype**—Facilities of the six-year-old European Coal & Steel Community (ECSC), which has successfully distributed its commodities in a common market, will be used to start with by Euromarket.

Jean Monnet, first president of the ECSC High Authority, and now heading the Action Committee for a United States of Europe, said of Euromarket:

"A great new stage in European history is just beginning. We are all traders on a peninsula which is narrow by the standards of a shrinking world."

**Problems** — The economy of Western Europe has some paradoxes, mostly tied to money. France, Italy, and the Benelux countries have adverse trade balances, while West Germany is somewhat embarrassed by a hoard



# Giants Abroad, Too

(1956 domestic and foreign sales)

## AUTOMOBILES

General Motors .....	\$ 10.8 billion
Ford .....	4.6 "
Chrysler .....	2.7 "
British Motor .....	560.0 million
Fiat (Italy) .....	544.0 "
Renault (France) .....	486.0 "
Volkswagen (Germany) .....	452.0 "

## CHEMICALS

Du Pont .....	\$ 1.9 billion
Union Carbide .....	1.3 "
Imperial Chemical (Britain) .....	1.2 "
Farbenfabriken Bayer (Germany) .....	380.0 million
Montecatini (Italy) .....	284.0 "
Pechiney (France) .....	263.0 "

## ELECTRICAL EQUIPMENT

General Electric .....	\$ 4.1 billion
Western Electric .....	2.4 "
Westinghouse .....	1.5 "
Philips' Gloeilampenfabrieken (Holland) .....	707.0 million
Siemens & Halske (Germany) .....	619.0 "
Assoc. Electrical Industries (Britain) .....	372.0 "
ASEA (Sweden) .....	234.0 "
Hitachi (Japan) .....	193.0 "

## PETROLEUM

Standard Oil (N.J.) .....	\$ 7.1 billion
Royal Dutch-Shell (Britain-Holland) .....	6.5 "
British Petroleum .....	2.0 "
Cie Francaise des Petroles (France) .....	500.0 million

## COAL, IRON, AND STEEL

U. S. Steel .....	\$ 4.2 billion
Bethlehem .....	2.3 "
Republic .....	1.2 "
Mannesmann (Germany) .....	810.0 million
Tube Investments (Britain) .....	500.0 "
ARBED (Luxembourg) .....	414.0 "
Schneider (France) .....	315.0 "
Yawata (Japan) .....	298.0 "
Cockerill-Ougree (Belgium) .....	282.0 "

Source: Commonwealth Engineering Co. of Ohio.

of \$6 billion in foreign currency and gold.

The situation has caused a crisis involving West Germany and the other members of the European Payments Union (EPU). Crushed and defeated just 12 years ago, West Germany is now a creditor, while the victorious Allies are heavily in debt.

There is pressure for a complete revision of the EPU and a re-evaluation of currencies (down for debtors, up for the creditor). France has already partially devalued the franc.

**Resistance**—West Germany's export boom of recent years (1957 exports totaled \$9 billion) has been partially due to low prices. If the mark exchange rate with other currencies is increased, this price advantage will disappear. Naturally, West Germany opposes such a step.

A factor that is complicating Bonn's position is speculation on the mark. A large part of its reserve is made up of Swiss francs, dollars, and pounds converted into marks on the gamble that the foreign units will be worth more marks in case of upward re-evaluation.

Some speculators are openly selling English pounds to make the speculative investment in marks, which does not make the UK happy. Foreigners can withdraw these funds as suddenly as they invest them. Many Germans remember the crash of 1931 which was caused largely by the sudden unloading of foreign holdings.

Britain, not a member of Euromarket, but an active participant in EPU, favors upping the exchange rate for the mark but is dead set against any devaluation of the pound. But rising inflation, even in West Germany, may upset all calculations.

**Role of the UK** — Britain is barred from joining Euromarket because of treaty commitments to the commonwealth nations (STEEL, May 6, p. 57) but has made certain tariff concessions toward a merging of Euromarket and a "free trade area" on practically all but agricultural items. The combined area would have common import duties and show preference to member countries.

A British committee has met



several times with a Euromarket group, and all parties feel certain that Euromarket will be linked to the free trade area. It will bring all the NATO countries and the British commonwealths into a common, tariff-free market of 250 million people with common import duties against all outside goods.

**Hurdles**—The sailing has not been smooth. In addition to the monetary difficulties, reduction of imports by the larger members has hurt Belgium and Luxembourg.

There are some who say ECSC's success was due to its operation in an expanding world market. They doubt that any of the three joint ventures can survive any rough economic weather.

The rebuttal runs like this: The impetus for European integration comes from the common people who are tired of war, high taxes, and low standards of living. The will of the average citizen will overcome any obstructions.

**Impact on U. S.** — Europe has been a big market for U. S. exports. How will the Euromarket affect this segment of business?

Prior to the common market, U. S. goods, for example, competed in Belgium on an equal footing with German, French, or British products. All paid the same import duty.

When the common market develops fully, British, French, and German products will move into Belgium duty-free, while U. S. goods will still require import duties. It will give European competitors a big price advantage.

**Solution**—Some U. S. exporters feel that the quality of their products will offset the price advantage of their competitors. However, the vast majority who seek business in Europe are making arrangements with European firms, or opening branches in the different countries (STEEL, Dec. 16, p. 71 and Dec. 23, p. 45).

American investment in Europe (exclusive of government loans and grants) since 1955 has been at the rate of \$150 million a year. Private U. S. holdings are estimated to be in excess of \$1 billion.

One American export executive said: "The best place from which to sell the European market is inside Europe." This will become increasingly true.



## USSR Gains in Steelmaking

On-the-spot report says Soviet production has doubled in seven years to 45 million tons; reveals pig iron results better than those of U. S. Reds behind in some areas

LATEST word on the Russian steel industry is that the Soviets are expanding capacity at a faster rate than the U. S., and their technical ability is keeping pace.

**Eyewitness**—Dr. Dennis J. Carney, steelmaking superintendent, U. S. Steel Corp.'s Duquesne, Pa., Works, has just returned from a 21-day tour of the USSR. He made the trip under auspices of the State Department.

In the past seven years, he reports, the Soviets have increased their steelmaking capacity 100 per cent—from 22.5 million ingot tons to 45 million. During the same period, the U. S. increased its capacity 25 per cent. (It'll be slightly

more than 140 million ingot tons Jan. 1.)

**Ambitious**—Dr. Carney says that Soviet steelmakers plan to double their present capacity by 1963, which will call for the addition of 9 million tons a year. U. S. capacity was increased that much in 1952, our most expansive year.

The Russians can produce steel as good as ours, Dr. Carney believes. He reports that their blast furnaces are outproducing ours. They are getting 2500 tons of iron a day from a 26.5-ft hearth, while 2000 tons a day from 28-ft hearth is considered good in the U. S.

Dr. Carney attributes Russia's edge in iron production to better



preparation of raw materials and to higher wind rates and blast temperatures. Most U. S. furnaces operate at a wind rate of up to 80,000 cfm and blast temperatures around 1200° F. At the huge Russian plant at Magnitogorsk, wind rates are up to 100,000 cfm, and blast temperatures are 1700° F. Furnaces that will handle temperatures of 2000° F are in the design stage.

**Differences**—There is no competition (as we know it) among Russian steel plants. They compete productionwise, but managers do not have to show a profit. But all personnel are under an incentive system.

Capital is unlimited. A fully integrated steel plant is maintained at Tula solely for research on the latest methods and techniques of production. Every new development from any part of the world is tried, and the results are given to every plant in the country.

**Lags**—Dr. Carney reported that what he saw indicated the Russians are behind the U. S. in: 1. Rolling and finishing. 2. Large-scale production of high-alloy steels. 3. Oxygen steelmaking. 4. Use of electric furnaces.

But they are much aware of these areas, he adds, and are working day and night to overcome their deficiencies. Example: For next year, they plan a 180-ton electric furnace to melt ferrous alloys. U. S. experts believe that high quality products cannot be made effectively in furnaces that large. But the Russians will try anyway.

**Still in Lead**—In a study for the National Bureau of Economic Research Inc., New York, Dr. G. Warren Nutter of the University of Virginia reports that in 1913, Russian steel production was 21 years behind that of the U. S. In 1955, he says, they were 29 years behind. If the Soviet steel production goal for 1960 is achieved, the lag will be reduced to 17 years.

Russia's space satellites and its ICBM indicate that the nation has technological knowhow and a sound, productive industry. Just how long they can be maintained in face of a low standard of living and shortages of consumer goods is a big question.



Hobco Mfg. Co.

## Sales of LP-Gas Rose 4.1% in '57

	Amount Used in '57 (Millions of gallons)
6.0% gain in chemical manufacturing	1665.5
4.5% in domestic and motor fuel use	3943.3
2.0% in synthetic rubber manufacturing	426.5
1.4% in industrial and miscellaneous uses	668.9
4.2% loss in gas manufacturing	203.5

Source: Phillips Petroleum Co.

*Crop dryers are a growing summer market as . . .*

## Trend to LP-Gas Continues

THE LIQUEFIED PETROLEUM-gas industry set a sales record in 1957. Phillips Petroleum Co. estimates industry sales at over 6.9 billion gallons—4.1 per cent better than the '56 pace. Strangely enough, the percentage gain ranks next to the lowest (3.9 per cent in '54) since the industry's birth in the early 1920s. But it still exceeds the estimated percentage increases in sales of all other petroleum products.

LP-G's major markets include:

**Domestic**—House heating is the most important growth factor here. The swing to central heating and year-round "weather conditioning" represents a huge potential market which is far from saturation.

**Agricultural**—Dealers will pay more attention to this market as a "summer load builder." Crop drying, flame weeding, and flame cultivation are growing applications. Sales of flame weeding equipment are up 30 per cent this year, Phillips estimates.

**Construction**—Use of LP-G is becoming more widespread as fuel for tar and asphalt kettles, plumber's pots, preheating torches, portable heating devices, and in oxypropane cutting. Asphalt aggregate drying with LP-G is gaining acceptance.

**Motor Fuel**—Sales rose 7.9 per cent in 1957. That's an increase of 61 million gallons for an estimated total of 834.5 million gal-



lons. Largest volume users are irrigation pump engines, farm tractors, and drilling rigs. Phillips estimates 15,500 farm tractors, factory-equipped for LP-G, were produced in 1957—a 27 per cent gain over the '56 total. About 45,000 more were converted. The fastest growing segment of the motor fuel market is lift trucks and industrial tractors.

**Appliances** — In '57, sales of LP-G appliances and equipment lagged behind their '56 pace. Phillips attributes this largely to the reduction in housing starts.

**Gas Manufacturing**—Sales to this industry dropped 4.2 per cent in '57, largely due to extension of natural gas pipelines.

**Chemicals**—The 6 per cent gain in this market was mostly due to the rapid growth in polyethylene capacity. Smaller but growing buyers are producers of nitroparaffins, acetylene, hydrogen, phenols, glycols, amines, acetones, alcohols, and various motor fuel and lubricating oil additives that use LP-G components as raw materials. Growing application: Propellant in aerosol-type containers.

**Rubber**—A sales increase of 8.4 million gallons to the rubber industry stemmed from an 8 per cent jump in U. S. consumption of synthetic rubber.

**Supply Is Good**—Built in 1957 were 32 plants with an estimated capacity of 1.2 million gallons per day. Phillips reports that 23 plants with a capacity of 1.5 million gallons per day will probably be built in 1958.

**Storage Facilities Grow**—Underground storage capacity is about 1.4 billion gallons. Additional facilities for 400 million gallons are planned or under construction.

**Moving Facilities Grow**—One new interstate pipeline and several short lines were opened recently to carry feedstock to chemical plants. Two railroads are studying the feasibility of laying a pipeline along their rights of way.

**Outlook**—By developing new markets and stepping up its sales efforts, Phillips says the industry should do even better in 1958. The key is greater saturation of summer markets like air conditioning, crop drying, aggregate drying, and tractor fuel.

# Ferrous Scrap: '58 to Match '57

## OUTLOOK FOR 1958 . . .

1st half consumption: Down slightly from 1957's last half.

2nd half consumption: Some improvement.

Consumption for year: Little change from 1957's.

Exports: Within 5 per cent of 1957's record rate.

## REVIEW OF 1957 . . .

### Steel Mills and Foundries Used More Pig, Less Scrap

Year	Pig Iron Used (Millions of gross tons)	Scrap Used	Percentage of Total Charge	
			Scrap	Pig Iron
1957	69.3	66.3	49.3	50.7
1956	66.9	71.1	52.8	47.2

### Where Scrap Came from

Sources	Millions of gross tons	
Prompt Industrial . . . . .	12.0	
Junked Automobiles . . . . .	4.5	
Railroads . . . . .	3.25	
Demolition	13.35	
Public Utilities		
Oil and Gas Industry		
City Dumps		
Shipbreaking		
Farms . . . . .	1.5	
Government Agencies . . . . .	0.5	
Detinning . . . . .	0.5	
Total Purchased Scrap . . . . .	35.6	(vs. 40 in '56)
Total Home Scrap . . . . .	36.3	(vs. 36.5 in '56)
Total U. S. Scrap . . . . .	71.9	(vs. 76.5 in '56)
Scrap Exported . . . . .	5.6	(vs. 5.4 in '56)
Total U. S. Consumption . . . . .	66.3	(8% less than '56)

### Exports Established a Record. Here's Where They Went

European Coal & Steel Community . . . . .	2.2	million gross tons
Japan . . . . .	2.2	" " "
United Kingdom . . . . .	0.3	" " "
Mexico, Canada, Spain,		
Austria, and others . . . . .	0.9	" " "

### Prices Fluctuated Widely

At start of '57, average price* was . . . . .	\$63.50
At end of '57, it was . . . . .	\$32.00†
1957 . . . . .	\$48.50†
Average for year:	
1956 . . . . .	\$53.81

Source: Institute of Scrap Iron & Steel Inc.

\*For No. 1 heavy melting grade at Pittsburgh, Chicago, and Philadelphia.

†Estimated.



# For Cleaner Scrapyards

Smokatron car burner uses electrostatic precipitation to keep gas and odors from polluting air in heavily populated areas. One installation will handle 150 autos in 8 hours

A SMOKELESS scrapyards auto burner, demonstrated in Atlanta to a group of scrap dealers, air pollution control officials, and steel mill executives, is capable of burning 100 cars in an 8-hour work shift.

The unit, Smokatron, manufactured by Summer & Co., Columbus, Ohio, uses electrostatic precipitation. Particles of smoke cling to the walls of charged steel tubes. Smoke and fumes are first forced through a water spray to eliminate odor-carrying particles.

A double chain conveyor runs the entire 140 ft of the burner and platforms, so that a car goes in one end, is ignited (by any one of a variety of means), and comes out as a burned-out metal shell.

**No Smoke**—In warm weather no discharge can be seen at the top of the precipitator towers. In cold weather, steam, like frosted breath, comes out but condenses in about 20 ft.

Here's how it works: The smoke, carrying millions of particles of burned, or partially burned carbon, and gaseous oxides, passes from the burning chamber through intake manifolds. Each intake manifold has a number of sprays which saturate the smoke stream with water.

The water puts certain oxides

into solution and washes them away. It also cools and slows down the smoke stream and eliminates the chance of sparks coming out.

**Magnetized**—The smoke is distributed evenly through 240 six-in. tubes, each 20 ft long. An insulated nickel-chrome wire electrode runs down the center of each tube. The wire electrode gets a negative electrical charge, while the tube walls get a positive charge.

The small particles in the smoke stream take on the negative charge and are held by the positive charged walls.

The process is described as so efficient that a particle as small as 1 millionth in. is precipitated. The stack remains relatively clean.

The unit shown in Atlanta (a larger one is being installed in New York to handle 150 cars in 8 hours) is fired by jet type gas burners. The burning chamber is 8 ft high, 8 ft wide, and 80 ft long. Platforms extend 30 ft at each end.

**Solid**—The chamber and platforms are made of fabricated 1 in. steel plates. No refractories or insulation are used because the idea is to let the heat escape through the burner walls to prevent temperatures that will burn the steel parts of the car.

The electrical equipment has

suppressors to prevent interference with radio or TV. A 100-kva transformer with 440 volts input and 66,000 volts output is controlled by a heavy-duty resistance bank in the primary circuit. If an arc sets up in the precipitator, another control device automatically drops the voltage and the arc is quenched.

Producers believe the Smokatron is one answer to the growing demand for elimination of air pollution in heavily populated areas.

## Oxygen Supply Is High

Oxygen production now exceeds immediate demands, says Linde Co., a division of Union Carbide Corp. The firm's expanded liquid producing plants in Ashtabula, Ohio, and Fontana, Calif., up monthly output by 150 million cu ft (115 million at Ashtabula, 35 million at Fontana).

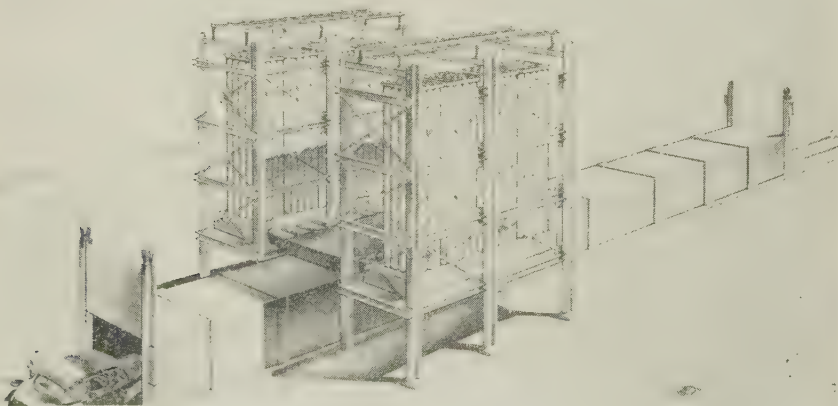
To meet increasing demands from the steel and chemical industries, Linde will further expand Fontana output of gaseous oxygen by some 430 tons in mid-1958 and add 115 million cu ft to monthly production there in 1959. Equipment for producing argon and other gases will also be installed. Linde's East Chicago, Ind., plant expansion will go on stream next summer.

In 1957, an average of 200 cu ft of oxygen was used to process each ingot ton of steel. Linde estimates that new oxygen steelmaking processes will boost the average to 300 cu ft per ton by 1960.

## SPS to Spend \$5 Million

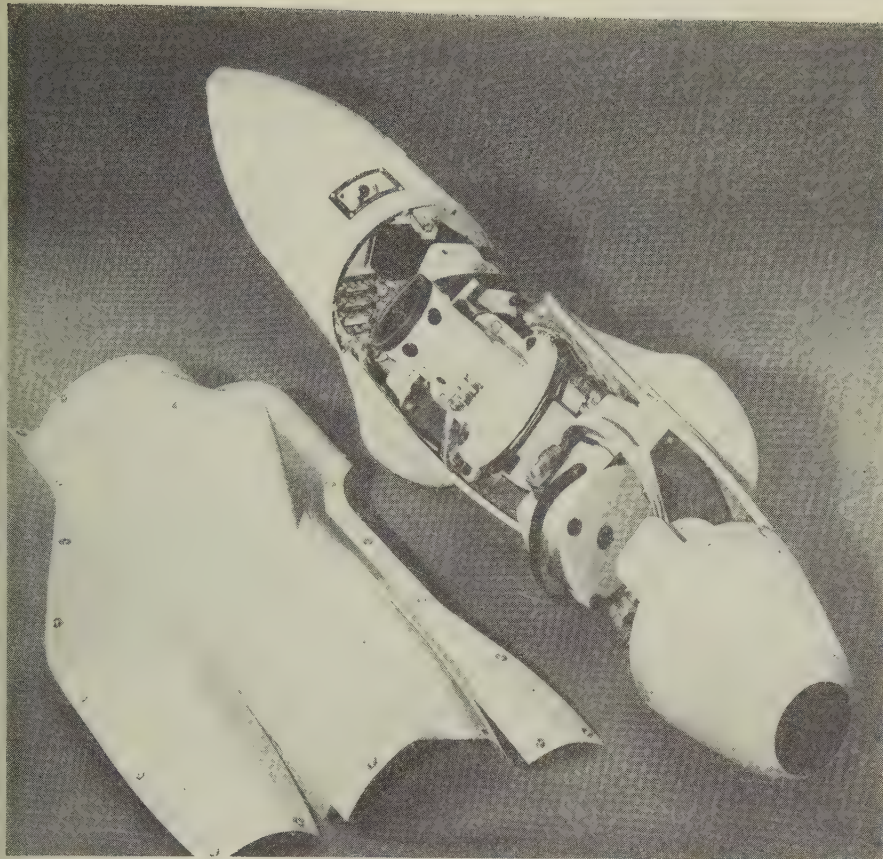
Standard Pressed Steel Co., Jenkintown, Pa., will spend \$5 million on capital improvements in 1958. It spent \$9 million on an accelerated 1957 program. While much of the 1957 spending was for new buildings, 1958 expenditures will be primarily for more efficient equipment.

The firm is presently completing a 160,000 sq-ft expansion of pressed steel shop and fastener facilities at Jenkintown and a 280,000 sq-ft manufacturing plant in Santa Ana, Calif. Its subsidiary, Columbia Steel Equipment Co., Fort Washington, Pa., just completed a 53,000 sq ft expansion.



This production auto burner cleans the waste for scrap without smoke or smell





*Bell & Howell's missile scoring pod. It opens a . . .*

## New Field for Photo Firm

**SUCCESSFUL** development of a system for scoring the performance of missiles has opened up a new field for a photographic and electronic equipment producer, Bell & Howell Co., Chicago. It perfected a system for the Navy in 18 months, completed its original contract, and is now working on a second contract. It is also making the system available to other companies working on missile or rocket scoring.

Bell & Howell produces a scoring "pod," used to determine how and why a guided missile hits or misses its aerial target. Because of high speed, missile accuracy can be closely evaluated only by photographic records of each test. Accurate records are vital because tests cost up to \$250,000.

**Picture Coverage** — Each pod, mounted on the wing tips of a target drone, a large missile, or a pilotless plane, contains four, high-speed motion picture cameras (16 mm), operated by remote control. The eight cameras give complete spherical coverage of a missile's flight as it nears the moving target. At least two cameras are focused on the missile at all times.

Scoring is done by checking the film records against grid co-ordinate charts. Data obtained show missile trajectory, miss distance, and other important functional characteristics.

**Safe Removal**—Should a direct hit be scored, the pods are jettisoned by explosive bolts (called "squibs") and lowered by self-contained parachutes. Pods will float

in water for 24 hours; a die marker is released upon water impact.

Each pod is about 71 in. long, is 11 in. in diameter, and weighs 95 lb. It has an aluminum skin with a brilliant red and yellow finish (colors assist in locating released pods). The cameras are watertight, interchangeable, and fitted with 142 degree, wide angle lenses.

**Problems Solved**—Bell & Howell got its start in the missile field when the Navy asked for a special camera. While designing the camera, the company felt it would be advantageous to make the vehicle to carry it. So Bell & Howell engineers had to tackle new problems—aerodynamics, missiles, and flotation.

Bell & Howell already had broad research and manufacturing facilities. Besides a full range of precision machining equipment, it operates metal forming, diecasting, plastic molding, metal finishing, and other departments. They were needed for the project.

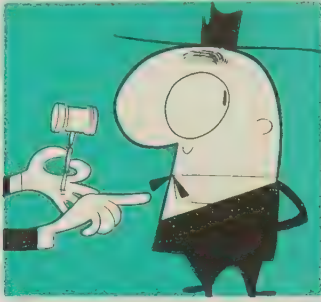
**Facilities Modified** — When the final prototype was accepted by the Navy, production facilities were set up. The job included the design of fixtures for handling parts and setting up assembly lines for the special cameras, for handling the hydroformed aluminum pods, the electronic elements, and other components. Also needed were elaborate facilities for inspection, testing, and calibrating. Special collimating and testing devices were purchased.

**Costs Less Now**—The original contract was for 20 pairs of pods at \$23,700 a pair. As a result of efficient production, additional contracts specify delivery at \$13,700 a pair—about \$3000 a pair less than the estimate given when the system was announced last March.

The 50-year-old firm got its first military contract in 1916. It now does a multimillion dollar military business. (It will come to about 12 per cent of total sales in 1957, vs. 11 per cent in 1956. The company would like to have the figure at 12 to 15 per cent.)

**Byproduct**—Carl J. Stauff, director of government sales, points out that, in doing government jobs, skills are frequently developed which lead to new commercial products.





## Mills and Mahon To Gain Stature in '58

LOOK for some lesser known Congressional figures to achieve national recognition in 1958.

Rep. Wilbur Mills (D., Ark.) is an example. He will be the new chairman of the House Ways & Means Committee, following the death of Rep. Jere Cooper (D., Tenn.) last week. That group writes your tax laws. Representative Mills has gained stature in Washington for his work on the Ways & Means Committee and the thoughtful way he conducted important joint economic subcommittee hearings in 1957.

Another man to watch is Rep. George Mahon (D., Tex.), who heads the House Defense Appropriations Subcommittee. Some Pentagon sources regard Representative Mahon's group as their big hurdle at appropriations time each year.

His ideas will hit the headlines, following the subcommittee's secret, around-the-country hearings on the status of our missile program. Any move to establish a separate missile agency will be passed on first by this subcommittee.

## Taxes and Defense Will Hold Headlines

With taxes (the possibility of an increase) and defense (a question of how big an increase) certain to hold the headlines next year, Representatives Mills and Mahon have equal opportunities to put their names in the public eye permanently.

They will also figure prominently in the debate that is sure to follow the top secret (but widely discussed) Gaither Report, which supposedly includes a full analysis of our defense in relation to Russia.

Ten days ago, the *Washington Post* reported President Eisenhower "has been forced to change his thinking" on the need for continued economy in the defense budget—as a result of the Gaither Report.

## The Gaither Report Will Direct Debate

Some leading metalworking executives worked on the report. How much of it is officially handed over to the Defense Preparedness Subcommittee headed by Sen. Lyndon Johnson (D., Tex.) is questionable. It is supposed to be an executive branch study designed only for the eyes of the President and his top advisers. Senator Johnson has asked for

a copy to use as a guide in his missile investigation.

But, unofficially, it is certain the report will find its way to Congress. (Just as someone from the National Security Council "leaked" it to the press.) That means the debate over defense will center on the report.

It might not be the best thing that could happen to us in 1958 because Congress may get lost in the intricacies of the report and lose sight of the basic problem. Is deterrence of nuclear war our main object? Or should we add new thinking on the possibility of limited wars wearing us down gradually?

## Details of the Gaither Recommendations

According to the *Washington Post*, these are the main recommendations: 1. A peak direct defense budget of about \$46 billion in 1960-61. 2. A \$5-billion program for shelters to protect the population from radioactivity. 3. Reorganization of the Pentagon command and of the current missions of the armed services. 4. Increased money for limited war expenses. 5. More money for basic research. 6. More money for foreign aid, including increased funds for underdeveloped countries.

The program could cost an average of \$20 billion a year more than our current \$72 billion annual federal budget, through 1970.

## Evaluating the Report: Be Careful

What you are reading in the press these days on the report is based on information from persons desiring to see it made public—or at least a part of it.

Asked by STEEL if the committee of businessmen, scientists, and economists regarded their study as conclusive evidence that the U. S. is in "gravest danger," one committee member told us that all the members were agreed: It's a "pretty serious situation." But he went on to estimate that some press accounts of the report have been running only 60 to 75 per cent accurate.

Conclusion: Until we know exactly what is in the Gaither Report, don't jump to any conclusions.

## Who Gets the Missile Money?

Based on Air Force figures, the Aircraft Industries Association estimates missile dollars (including R&D) are divided this way: Airframes, 35 per cent; propulsion systems, 20; guidance and control, 20; military construction, 10; nose cones, 8; industrial facilities, 6; miscellaneous, 1.

One prime contractor of an operational air-to-air missile reports his costs this way: Nonnuclear warheads, 3.5 per cent; gyros, accelerometers, hydraulic servounits, switches, actuators, etc., 33; electronics, 43; electric power source, 1.5; airframe, 12.5; solid propellant rocket engine, 6.5.



# You may need more (or fewer) salesmen when...



1. Sales fluctuate sharply.
2. Inquiries are frequently improperly handled.
3. Customer calls are too infrequent (or frequent).
4. Competitors cover the territory with many more (or less) salesmen.
5. Turnover in sales manpower is high.
6. Selling costs are too high (or low).
7. Sales are static for a long time.

## Have Enough Salesmen?

The question is particularly pertinent in these days of declining volume. Here's how a capital goods producer develops yardsticks to help him find answers

**HOW DO YOU** know if you have the right number of salesmen?

Now that we have plenty of capacity in virtually every corner of metalworking the answer to that question becomes vital to help keep the plants busy.

**Birth of ABC**—To find answers, STEEL invented ABC Machines Inc. and submitted its problems for solution to Larry Felder, director of Marketing Services Div., Sunderlin Organization, a Cleveland management consulting firm. Some of ABC's problems are typical. The solutions found for them may give you a clue to solve your difficulties.

ABC makes a line of machine tools selling for \$10,000 to \$20,000. Its 1957 volume was \$10 million, but trends in the industry and new orders indicate sales in 1958 may drop one-third. What's more, business has declined every year in the last four.

ABC sells through 12 manufac-

turers' agents. It has been cultivating the expansion market primarily; less than 20 per cent of its machines delivered in 1957 were replacements. On an engineering and design basis, the ABC line compares favorably with competing apparatus. President A. B. Carl, an engineer and machine designer, developed many of the innovations.

**Basic Problem**—One of the first difficulties, says Mr. Felder, is that President Carl isn't marketing minded. He hasn't visited a customer's plant since the Korean War when patriotism persuaded him to leave his office and drawing board to help modify an ABC tool for a new defense job. "When a company sells a costly item," says Mr. Felder, "it's particularly important that the brass give an occasional hand to fieldmen."

**Market Research**—Certainly, top management, whether it came up through sales, production, engi-

neering, or finance, must devote much attention to marketing policy matters. No marketing policy exists at ABC because there's little information on the market. Facts are needed urgently. A market research study can get them, and Mr. Felder advises that an outside agency do the job—at least the first time. It would have the knowhow; and would not have the prejudices that might creep into a study ABC does itself.

These questions must be answered by the survey:

1. Are the products right?
2. What's the potential dollar volume in '58?
3. What will that potential be in '63? In '68?
4. Who are the potential customers? Where are they?
5. How old is their ABC-type equipment?
6. What are their expansion plans?
7. How many of the potential customers have ABC machines?
8. How many companies compete directly with ABC?
9. What proportion of the market can ABC reasonably get?
10. Are sales costs reasonable and fairly uniform?
11. Are ABC's prices competitive?
12. How much must they be low-



ered to win substantially more business?

**Survey Results**—Here's what the market research study shows for ABC: The product line is in good shape in design and engineering. The national potential volume in '58 for all manufacturers is \$55 million to \$60 million. Possibilities are bright for a 3 to 5 per cent annual increase during the next decade. ABC should aim for 20 per cent of the market, although it will be lucky to take 16 per cent next year at the rate it's going. As recently as five years ago, it accounted for 24 per cent. Four major competitors and ABC traditionally have sold 85 to 90 per cent of all the equipment. Another dozen small firms split the rest.

The study reveals that ABC's sales costs vary widely from representative to representative — ranging from only 10 per cent of gross sales for three men to more than 20 per cent for one. In much of the capital goods field, sales costs should run about 16 per cent. If costs are too low, it can mean inadequate service for customers who may switch to somebody ready to give more attention. Excessive costs can mean a salesman has too few customers, too lean a territory (or too fat an expense account).

The survey also shows that ABC's prices are competitive. Marked sales increases wouldn't result unless prices were cut 10 to 15 per cent—a prohibitive reduction in the face of rising labor and other costs. Conclusion: Do not cut prices.

**The Sales Plan**—How, then, can sales be stimulated?

With a sales plan, developed from data gathered in the market research. When market information on ABC was developed, it revealed that one or more of three approaches were needed in changing selling assignments.

- Increase the penetration of existing territories. (A maker of hoists put a second salesman in Detroit. The move did not double sales—and wasn't supposed to—but it did boost volume 40 per cent and provide better service to existing customers.)

- Add territories or develop more markets for existing products in present territories. (A producer

of a machine tool accessory added to its sales force in a time of declining volume and succeeded in opening up a west coast market. Result: Total sales dipped less than competitors'.)

- Rejuggle territories for better balance and use of present manpower. (A manufacturer of bearings did. Without adding a man, it boosted sales 10 per cent while competitors were struggling to keep the status quo.)

**ABC's Program**—At ABC, the sales plan shows that the hoist-maker's approach should be the primary one. Some 75 per cent of ABC's market potential lies in a geographic arc running from Pittsburgh through Youngstown, Cleveland, Detroit, to Chicago. Mr. Felder advises concentrating on the arc first, then gradually building up other areas.

Several facts turned up by the market study prove that more salesmen are needed. (Whether they should be direct sellers or agents is another problem and another story.) In ABC's price range, the usual breakeven point for salesmen is a volume of \$400,000 to \$500,000 per man per year (give or take 10 per cent). At the 1957 sales level of \$10 million, the company needed at least 20 salesmen, but had only 12. Even if 1958 sales were to slip by one-third, ABC should still have at least 14 men on the road. (Another rule of thumb says that one salesman should be employed for every 33 production workers.)

On the average, a salesman should make 1000 to 1250 calls per year for ABC's kind of product (even more for a less expensive line). And every potential customer should be visited at least once a year. One machine tool organization, Motch & Merryweather Machinery Co., Cleveland, works on this basis: "A" prospects should be called on at least once a month, "B" companies once a quarter, "C" prospects every half year, and "D" firms once a year.

ABC's sales call records are sketchy, but plenty of evidence turned up to show that some prospects had never been called on and that some of the best customers saw ABC representatives only once every two or three months. Needed, says Mr. Felder, are better call

## The Six Common



reports and stricter discipline on the frequency of calls.

"One result of an underweight sales staff," says Mr. Felder, "is too much concentration on the expansion, rather than the replacement, market. The expansion market is easier and quicker to sell."

Finally, the survey reveals that the median age of ABC-type tools is 11 years, with some 20 per cent of them 15 years or older. "That proves the replacement market is big," says Mr. Felder. "It proves ABC's market can grow by 3 to 5 per cent annually even if total capacity of the industries it serves won't rise that much."

**Preparing for Future** — ABC should get set for that growth by carrying a larger sales force than it needs each year. The sales plan should provide for the training of new men.

It should provide for a lot more than just the salesmen; it should cover the sales promotion, advertising, and product development needed to give the seller a fair start.



## Sales Organizations

1. **Functional:** One salesman handles the entire product line for his territory. Companies use this system when they're not greatly diversified and usually when they're not nationwide. The sales manager, or even salesmen, act as their own researchers and sales promotion men.
2. **Product Staff:** This is a variation of the functional setup, except specialized product staffs are added to the organization to assist in marketing.
3. **Geographical:** It's usually adopted by a large company with nationwide marketing problems. The sales department is divided into regions.
4. **Product Specialization:** It's for diversified firms. Each product has its own sales-marketing force, but all are under one chief.
5. **Product Operating:** This is the same as No. 4, except marketing is a central staff function.
6. **Market Specialization:** It's used where one product is purchased by widely different industries. Individual staffs are set up by markets.

Each phase is a story in itself, but the biggest story is the manpower situation.

National Sales Executives Inc. reports that American industry is short 405,000 salesmen to create new markets for expanding production. Some 26,500 NSE members queried said they needed 255,000 more experienced salesmen and 150,000 trainees. McKinsey & Co., New York, and many other management consultants agree that most companies need more salesmen, not less.

Says Mr. Felder: "There's no such thing as having the right number of salesmen all the time. But a sales plan—whether for the small or large firm—can let you know what the right number is. It gives you the target, and you can improve your aim with practice."

*\* An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

## Kaiser Traps Smog

Kaiser Steel Corp. has installed electrostatic precipitators to remove smoke particles from open hearth furnace exhausts at its Fontana, Calif., plant. Seven years of research and \$5.5 million went into the operation.

Furnace exhaust is cooled down to about 500° F in waste heat boilers. It is then blown up through a 70-ft duct into the precipitators, which are mounted on the roof of the open hearth building. Each precipitator has two 40 by 20 by 20 ft chambers. As smoke particles enter a chamber, an electrical charge attracts them to a steel curtain, where they collect and are shaken off into hoppers.

## GE To Streamline Plant

General Electric Co. will spend \$2 million to modernize electric fan production facilities at Bridgeport, Conn. Work will begin in 1958.

## Pleasure Boats Gain

In '57, retail spending for boating equipment and services hit a record \$1.9 billion

MORE THAN 7 million pleasure boats are now in use in the U. S.—345,000 were added during 1957. The fleet includes:

- 437,000 motorboats, including outboards 16 ft and over, auxiliary sailboats, and inboard power craft.
- 4000 large inboard yachts and sailboats.
- 300,000 other inboard motorboats.
- 3,360,000 outboard boats.
- 595,000 sailboats without inboard auxiliary power.
- 2,375,000 rowboats, canoes, and miscellaneous craft.

The data were compiled by Outboard Boating Club of America and the National Association of Engine & Boat Manufacturers.

Dollar volume of retail purchases hit a record \$1.912 billion in 1957—up 21 per cent from the 1956 level. It includes spending for boats, engines, accessories, fuel, insurance, storage, and other miscellaneous expenses. About \$391.4 million was spent for new outboard boats, motors, and trailers.

Producers used about 45 million lb of aluminum in fabricating boats and outboard motors during the year—an increase of about 11 per cent over 1956.

## Martin Speeds Missiles

Martin Co. officially opened its new \$18-million guided missile and electronic systems plant near Orlando, Fla. It will be in full operation by Jan. 1, nine months after construction started.

Assembly lines, offices, and manufacturing areas in the five building, 500,000 sq ft facility can be rapidly modified or enlarged.

Martin is employing 2400 to produce three major weapon systems—the Army's Lacrosse field artillery guided missile, the Navy's Bullpup air-to-surface missile, and Missile Master, an electronic system for controlling and co-ordinating the fire of missile anti-aircraft batteries.





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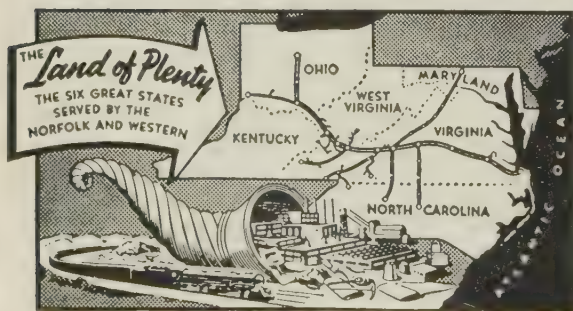
L. E. Ward, Jr., Manager

Industrial and Agricultural Dept.

Drawer S-774 (Phone Diamond 4-1451, Ext. 474)

Norfolk and Western Railway

Roanoke, Virginia



## Norfolk and Western RAILWAY





Chrysler Corp.

## U. S. Truck Production

(Thousands)

	Heavy Duty	Light & Medium	Totals
1958*	210	840	1,050
1957†	200.5	883.3	1,083.8
1956	223.1	881.2	1,104.3

Source: Ward's Automotive Reports.

\*Estimated.

†Preliminary.

## Big Three Truck Production

(Thousands)

	1957*	1956
Chevrolet	354.0	353.5
GMC truck	73.4	91.5
Ford	336.5	297.3
Dodge	77.4	91.4
<b>Totals</b>	<b>841.3</b>	<b>833.7</b>

Source: Ward's Automotive Reports.

\*Preliminary.

# Truck Output Steady in '58

Lightweight vehicles and the independent manufacturers increase their shares of the market in '57. Trends are to cut weight and boost cargo space for all sizes

**TRUCK OUTPUT** next year will be about the same as this year's, predicts R. C. Woodhouse, general truck sales manager at General Motors' GMC Truck & Coach Div., Pontiac, Mich.

Some 1,083,000 trucks have been built in 1957, about 2 per cent behind 1956 output. That's low for the industry. With the exception of 1954, when 1,022,000 were built,

production has averaged 1.2 million units annually since 1947.

Unlike carmaking, truck output is keyed closely to orders, so production figures are an accurate reflection of sales.

**Lion's Share** — Most output comes from the Big Three of auto-dom—Ford, Dodge, and GM Chevrolet and GMC truck divisions. This year they took 80 per cent of total

output, vs. 75.4 per cent in 1956.

But truck builders estimate the four divisions account for only two-thirds (or less) of the industry's dollar sales volume. Most of the high priced heavy duty and special order trucks are built by the 19 or 20 independent manufacturers. These small builders are starting to increase their share of the market.

**Higher Prices**—The price tags on 1958 trucks are averaging 3 per cent more than those on their 1957 counterparts. Prices on light pickups have been boosted only 2.3 per cent.

The price hikes are partly responsible for recent market shifts in truck buying. They are a minor reason why sales won't be better next year.

**Cause Shifts**—Heavy duty truck

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building was running 7 per cent behind last year's pace until November, when orders jumped because of a rush to beat Nov. 15 price boosts. Since then, output in the 16,001-lb class and up has come from behind to take 18.5 per cent of the market, compared with 20.1 per cent in 1956, according to *Ward's Automotive Reports*.

Next year, heavy duty jobs are expected to increase their share of the market to 20 per cent as over-the-highway haulers replace older trucks with more efficient models.

**Lights Up**—While the heavy-duty market was on its roller coaster, light trucks (under 10,000 lb) showed substantial sales gains because of new models introduced in 1957. Ford says its new style, new size pickup accounted for 85 per cent of the company's half-ton truck sales.

Preliminary reports indicate 704,470 light duty trucks will have been built this year, compared with 640,494 in 1956. This represents a 7 per cent market increase and equals 65 per cent of the 1957 market.

The industry believes light trucks will slip slightly in 1958 as efforts are made to recover territory lost by medium class trucks.

**Mediums Down**—Trucks in the 10,001-16,000 lb classes have dropped to a postwar low of 16.5 per cent of the market. It means that 173,408 mediums will be built this year.

Next year, truck builders expect this market group to increase its sales because of extensive engineering and design changes.

**Design Important** — Improvements in efficiency and performance are the keys to more truck sales, thinks Phillip J. Monaghan, General Motors vice president and general manager of the GMC Truck & Coach Div. "The truck buyer must get the greatest dollar return possible on his investment, while car buyers can include some intangible nondollar returns as well," Mr. Monaghan explains.

He says truck buyers look for more cargo space in the same length, width, height, and weight restrictions. They want longer-lived, smaller engines with more economy. Other vital areas are simplification of design to cut

maintenance costs and make it possible for fleet owners to interchange parts.

**Huge Savings**—"There are 1.5 million so-called highway trucks in use," says Mr. Monaghan. Improving gasoline and diesel fuel mileage by 1 mpg for this group would mean an average saving of \$800 million, he says.

Increasing mileage between engine overhauls by 100,000 miles makes for potential savings of \$325 million.

"If we can reduce tractor weight 500 lb, we can replace it with cargo worth \$730 million a year," he asserts.

**Makes Changes**—To boost efficiency, Ford is using a new water pump and has modified engine crankshafts, pistons, valves and camshafts. GMC Truck is making a nonslip differential available on its heavier trucks. All builders are offering automatic transmissions on more heavy and medium duty models.

## Happy Year in Imports

As the year closes, automakers are viewing the impact of foreign cars with mixed emotions.

George Romney, president, American Motors Corp., believes

new car registrations will exceed production in 1958. The difference will come from sales of imported cars.

His prediction squares with industry estimates of 300,000 or more foreign car registrations in 1958 vs. 204,000 this year, 98,187 in 1956, and 51,658 in 1955.

**Pleased**—Mr. Romney is satisfied because the figures show that car buyers are interested in compactness and economy, and the AMC president has a full line of compact cars to sell. Foreign competition isn't likely to hurt sales; it may help them.

**Dubious** — William Flaherty, Chrysler Corp.'s director of business research, isn't so optimistic. He claims prestige, not economy or size, is the major determinant in buying a foreign car.

It may be true of Jaguar and Mercedes buyers. But does it apply to Volkswagen, Renault, or English Ford owners who now dominate the import market?

Adds Mr. Flaherty: "On the long range basis, foreign car sales in the U. S. should not gain more than a 7 per cent penetration of the total auto market. In a 6-million car year, it would mean sales of about 500,000 units. There's little evidence these cars are going to replace or erode the market for U. S. makes."

But industry is looking ahead to years when 8 million and 9 million cars will be normal production. It's figuring on taking a close look at the possibility of building small cars here when imports reach 500,000 annually. It could happen in 1959.

## Exhaust Notes

• Chevrolet produced 9000 more units (cars and trucks) than Ford this year. Ford still leads this GM division in car sales by almost 40,000 units.

• Buick reports port-of-entry prices on its Opel Caravan being imported this month will range from \$2194.45 (East Coast) to \$2376.53 (West Coast).

• Ford's International Div. announces U. S. registration of its five English Ford cars totals 11,392 for the first three quarters of 1957, compared with 2515 during the same 1956 period.

## U. S. Auto Output

Passenger Only

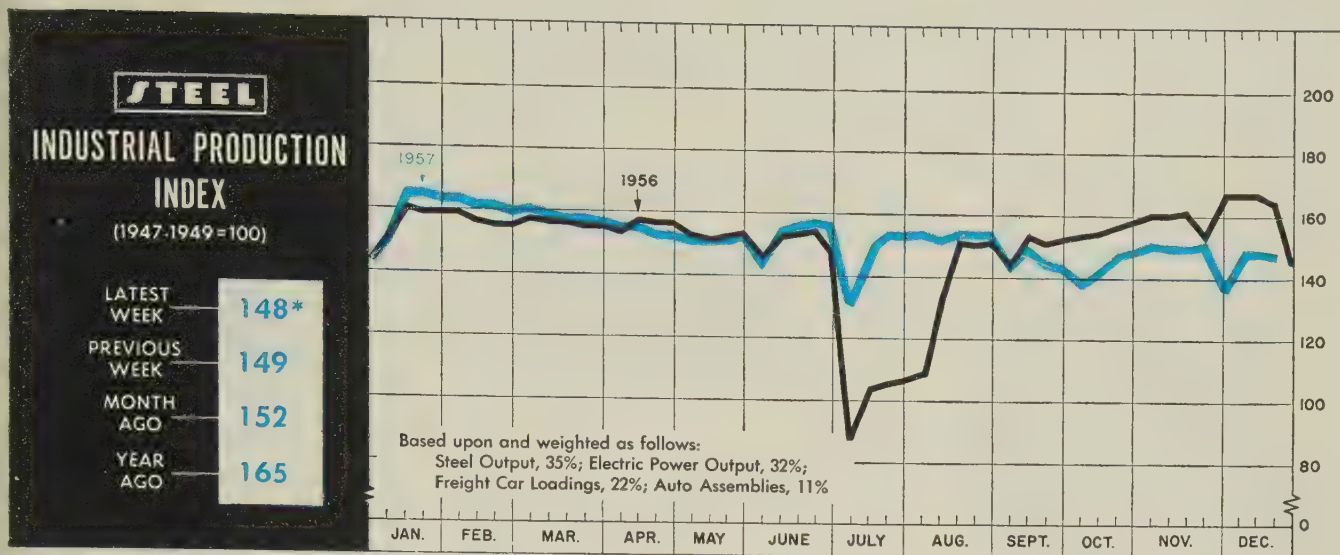
	1957	1956
January	642,089	612,078
February	571,098	555,596
March	578,826	575,260
April	549,239	547,619
May	531,365	471,675
June	500,271	430,373
July	495,629	448,876
August	524,354	402,575
September	274,265	190,716
October	327,362	389,079
November	578,601	580,803
11 Mo. Total	5,573,099	5,204,650
December		597,226
Total		5,802,808

Week Ended	1957	1956
Nov. 23	151,846	118,949
Nov. 30	114,795	159,976
Dec. 7	139,506	167,576
Dec. 14	145,162†	158,431
Dec. 21	140,086†	154,832
Dec. 28	95,000*	99,577

Source: *Ward's Automotive Reports*.

†Preliminary. \*Estimated by STEEL.





\*Week ended Dec. 21.

## Slip at Yearend Doesn't Erase Record

AT YEAREND, the nation's economy leaves much to be desired. The performance of metalworking, in particular, has been disappointing, but when 1957 is stacked up against its predecessors, it will look pretty good. Many of its records will be hard to beat.

**Big Picture**—The broadest indicator of all, gross national product, probably will average about \$435 billion this year, an increase of \$22.6 billion over 1956's record. Productionwise, STEEL's index (above) will just edge the 1956 weekly average. For 55 weeks, the 1957 average is 152.1, vs. the 1956 average of 150.6 (1947-49=100). The Federal Reserve Board's production index will close out neck and neck with its 1956 average—about 143 (1947-49=100).

The makeup of the big picture shows why this will be called the year of the rolling adjustment. According to the FRB's indexes for 11 months, primary metals this year fell below the 1956 monthly level, 131 to 138. But the metal fabricating index is copping the race handily with a monthly average of 176 against the 1956 average of 172.

In shipments of durable goods, 1957 is the best on record, with average monthly sales of \$14.365 billion for 11 months. Last year's average was \$13.805 billion. New

orders are another matter. This year's monthly average so far has slipped to \$13.376 billion, compared with last year's \$14.442 billion. Still, 1957 will be the third best year for orders, ranking behind 1955.

According to STEEL's continuing compilation of business information

(some of which is seen in the charts and tables on the next two pages), here is how some of the pieces fit into the big picture, comparing monthly averages for all of 1956 with those available for 1957.

**Capital Goods**—Shipments of machine tools are averaging over \$74

### BAROMETERS OF BUSINESS

#### INDUSTRY

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Production (1000 net tons) <sup>2</sup> . . .	1,664 <sup>1</sup>	1,735 <sup>1</sup>	2,322
Electric Power Distributed (million kw-hr) . . .	12,600 <sup>1</sup>	12,570	12,227
Bituminous Coal Output (1000 tons) . . .	9,000 <sup>1</sup>	9,075	10,660
Petroleum Production (daily avg—1000 bbl) . . .	6,800 <sup>1</sup>	6,884	7,376
Construction Volume (ENR—millions) . . .	\$300.0 <sup>1</sup>	\$226.5	\$456.5
Auto, Truck Output, U. S., Canada (Ward's) . . .	168,522 <sup>1</sup>	175,158 <sup>1</sup>	189,826

#### TRADE

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Freight Car Loadings (1000 cars) . . . . .	600 <sup>1</sup>	603	698
Business Failures (Dun & Bradstreet) . . . . .	269	287	249
Currency in Circulation (millions) <sup>3</sup> . . . . .	\$31,500 <sup>1</sup>	\$31,827	\$31,835
Dept. Store Sales (changes from year ago) <sup>3</sup> . . . . .	-2%	-5%	+2%

#### FINANCE

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Bank Clearings (Dun & Bradstreet, millions) . . . . .	\$22,000 <sup>1</sup>	\$21,660	\$25,946
Federal Gross Debt (billions) . . . . .	\$274.8 <sup>1</sup>	\$274.7	\$277.0
Bond Volume, NYSE (millions) . . . . .	\$28.0 <sup>1</sup>	\$30.0	\$28.5
Stocks Sales, NYSE (thousands of shares) . . . . .	11,000 <sup>1</sup>	11,847	11,265
Loans and Investments (billions) <sup>4</sup> . . . . .	\$86.2 <sup>1</sup>	\$86.9	\$86.4
U. S. Govt. Obligations Held (billions) <sup>4</sup> . . . . .	\$25.8 <sup>1</sup>	\$25.6	\$25.9

#### PRICES

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
STEEL's Finished Steel Price Index <sup>5</sup> . . . . .	239.15	239.15	225.92
STEEL's Nonferrous Metal Price Index <sup>6</sup> . . . . .	206.4	206.5	252.5
All Commodities <sup>7</sup> . . . . .	118.0	118.0	116.2
Commodities Other Than Farm & Foods <sup>7</sup> . . . . .	125.7	125.7	124.4

\*Dates on request. <sup>1</sup>Preliminary. <sup>2</sup>Weekly capacities, net tons: 1957. 2,550,490; 1956. 2,461,893. <sup>3</sup>Federal Reserve Board. <sup>4</sup>Member banks, Federal Reserve System <sup>5</sup>1935-1939=100. <sup>6</sup>1936-1939=100. <sup>7</sup>Bureau of Labor Statistics Index, 1947-1949=100



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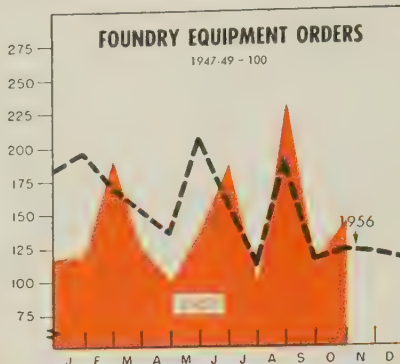
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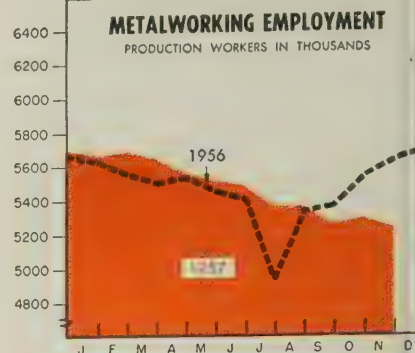
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## THE BUSINESS TREND



	1957	1956	1955
Jan. ....	117.9	195.6	81.0
Feb. ....	188.4	169.0	90.4
Mar. ....	127.0	152.7	163.6
Apr. ....	101.1	135.2	178.6
May ....	136.2	207.0	145.7
June ....	187.5	156.7	186.8
July ....	98.6	110.3	213.4
Aug. ....	231.3	188.3	134.0
Sept. ....	113.9	114.7	156.7
Oct. ....	145.3	122.2	108.6
Nov. ....	...	121.0	154.4
Dec. ....	...	115.6	183.9
Avg. ....	...	149.0	150.0

Foundry Equipment Mfrs. Assn.  
Charts copyright, 1957, STEEL.



	Prim.	Fab.	Mach-	Elec.	Trans.
1956	Mtds.	Prod.	inery	Mchy.	Equip.
Nov.	1,132	911	1,273	918	1,460
Dec.	1,133	909	1,289	907	1,438
1957					
Jan.	1,130	906	1,299	892	1,440
Feb.	1,124	903	1,294	877	1,480
Mar.	1,112	898	1,291	869	1,470
Apr.	1,101	889	1,277	853	1,440
May	1,093	883	1,255	847	1,430
June	1,093	887	1,239	855	1,410
July	1,075	869	1,207	848	1,370
Aug.	1,077	878	1,180	861	1,360
Sept.	1,061	878	1,186	879	1,270
Oct.*	1,051	889	1,163	868	1,230
Nov.	1,031	877	1,136	853	1,250

\*Preliminary.  
U. S. Bureau of Labor Statistics.

million a month, although the figure will probably edge close to last year's \$73.8 million with the addition of data for the last two months of 1957. New orders are off drastically, averaging \$47.3 million for 1957, vs. \$77 million last year. The comparison will be worse with the addition of November and December figures.

Industrial furnace orders are averaging \$4.9 million this year, compared with \$6.6 million last year. Freight car orders for ten months average 3864 against 1956's average of 3483, but shipments have increased even more, 8344 a month, vs. 5590 last year. Foundry equipment orders this year are almost equal to those of last year, averaging 144.7, vs. 149 in 1956 (1947-49=100).

The material handling index (1954=100) averages 129.86 so far, compared with 147.68 a year ago. Orders for industrial supplies to date are ahead of last year's pace, 204 to 202 (July, 1948=100).

**Appliances**—Of all the household goods, radio shipments show the best advantage over 1956. Through ten months, the industry has shipped about 1,195,000 sets a month, compared with 1,165,150 last year. But television is behind

the pace, 525,000 units monthly, vs. 616,000.

Most other appliances are showing the customary fourth quarter pickup in shipments, but the overall level is considerably below that of 1956. Automatic gas water heaters are off about 11,000 units a month. Electric refrigerators, one of the slowest major appliances this year, are lagging by more than 33,000 units a month.

Gas and electric ranges are behind the year-ago pace by over 38,000 units a month. Washing machines are an average of about 58,000 units a month behind, and dryers are over 33,000 units a month off the 1956 pace.

**Components**—The screw machine product industry has done fairly well this year. New orders have averaged 176 (1946-49 = 100) a month, compared with 179 last year; shipments have maintained a 181 average—just 5 points below the 1956 figure. Gear sales have been high, but they have not quite come up to the '56 standard. On a 1947-49 basis, they have averaged 228.1 per cent, compared with the all-time record of 254.4.

Steel forgings have hung just below the year ago trend line all year, with monthly shipments aver-



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## MATERIAL HANDLING EQUIPMENT

BOOKINGS—1954 = 100

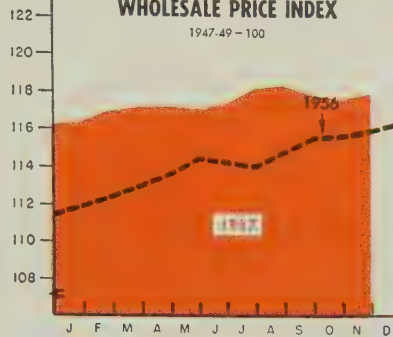


	1957	1956	1955	1954
Jan. ...	126.34	122.43	97.00	93.56
Feb. ...	139.29	129.56	98.71	96.45
Mar. ...	140.76	166.14	149.16	115.55
Apr. ...	132.67	145.20	109.52	122.76
May ...	157.95	155.53	110.50	98.54
June ...	121.57	189.13	139.00	112.42
July ...	128.31	165.50	111.76	91.68
Aug. ...	110.09	168.70	106.20	94.06
Sept. ...	116.79	130.35	136.80	88.43
Oct. ...	124.80	143.38	123.52	95.41
Nov. ...	138.50	118.09	118.09	88.66
Dec. ...	117.76	139.85	102.49	
Avg ...	147.68	120.01	100.00	

Material Handling Institute Inc.

## WHOLESALE PRICE INDEX

1947-49 = 100



	All Commodities		Other Than Farm & Foods	
	1957	1956	1957	1956
Jan. ...	116.9	111.9	125.2	120.4
Feb. ...	117.0	112.4	125.5	120.6
Mar. ...	116.9	112.8	125.4	121.0
Apr. ...	117.2	113.6	125.4	121.6
May ...	117.1	114.4	125.2	121.7
June ...	117.4	114.2	125.2	121.5
July ...	118.2	114.0	125.7	121.4
Aug. ...	118.4	114.7	126.0	122.5
Sept. ...	118.0	115.5	126.0	123.1
Oct. ...	117.8	115.6	125.7	123.6
Nov. ...	118.0	115.9	124.2	
Dec. ...	116.2	124.6		

U. S. Bureau of Labor Statistics.

aging 130,000 tons a month. Last year the average was 139,000 tons.

**Construction**—This industry is expected to play an important part in keeping the economic recession within bounds. The nation has never suffered a serious depression during a construction boom, and the boom is still on. Construction awards tabulated by F. W. Dodge Corp. have averaged \$2.79 billion through ten months of 1957. In all of 1956, the average was \$2.63 billion.

A clue to the changing character of the construction boom can be seen from the fact that awards for fabricated structural steel — used in heavy building—have fallen to a monthly average of 246,600 tons from 1956's 334,400 tons. However, average monthly shipments are setting a new high of 308,100 tons, compared with 266,700 tons a month last year.

**Foundries**—This is considered one of the weakest segments of metalworking this year, but on a monthly average basis, it hasn't been too bad. For instance, shipments of steel castings have averaged 152,400 tons a month, only a small percentage shy of last year's average of 161,000 tons. Malleable casters have shipped 72,-

998 tons a month, against 79,322 last year. Gray iron shipments have held to an average of 1,084,000 tons a month. It was 1,155,000 tons in 1956.

## Car Sales Third Best

It looks like 1957 will be the third best sales year in history for the automotive companies, says L. L. Colbert, president of Chrysler Corp. Final sales total for calendar 1957 will be close to 5,955,000, and Chrysler Corp. will account for 1,130,000, nearly 208,000 more units than Chrysler sold in 1956, Mr. Colbert says.

"The potential exists for another good year in 1958, but whether it materializes depends on two things:

"1. How quickly the economy can adjust to the present downturn or leveling off in some sectors of business activity.

"2. How successful the auto industry proves to be in stimulating a satisfactory volume of business."

Counteracting the downturn are more housing starts; greater local and state spending; the easing money situation; greater defense spending; higher nondurable goods and service-type spending; and continued high consumer expenditures, Mr. Colbert thinks.



# DOES A HONEYBEE HAVE AN ANSWER TO CANCER?



Mouse and man, worm and wasp, pig and protozoa—these are some of the twenty-eight living things used in the American Cancer Society's nation-wide research program.

Scientists rely most—in 189 projects—on man; next comes the mouse—in 139 studies—and there is even a honeybee helping one scientist in his search for facts that may save the quarter of a million Americans now dying each year of cancer.

Many organisms. Many laboratories. Many hundreds of scientists. Together they make up a balanced program of research with freedom and flexibility, reaching across the country and across scientific

disciplines, to tap the best minds and the best ideas.

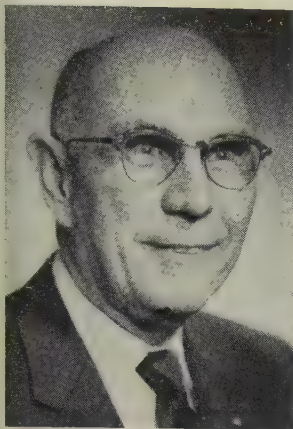
From these twenty-eight organisms science is getting facts that may save more lives tomorrow. But what of today? What of you?

With early diagnosis, half of those with cancer can now be cured if treated promptly. If you have cancer, you may well be saved—but only if you give your doctor a chance. Go to him for an annual health checkup . . . not because you feel ill, but because you feel good and want to stay that way.

The worm and the wasp, the pig and the protozoa will provide the answers for tomorrow: for today, see your family doctor.







**JAMES B. MACKEY**  
Sloan Valve p. a.



**ANTHONY J. DE FINO**  
Hupp Corp. v. p.



**C. A. McTAGGART**  
Armco Drainage v. p.



**CLINTON E. SMITH**  
Pratt & Whitney div. sales

**James B. Mackey**, production control manager, Sloan Valve Co., Chicago, was appointed purchasing agent to succeed **Hubert F. Arthur**, retired.

**Anthony J. De Fino** was elected vice president of **Hupp Corp.**, Cleveland. He joins Hupp after serving since 1955 as vice president and general manager of the All-Year Air Conditioning Div., Servel Inc., Evansville, Ind. Previously he was vice president and general manager of the Buffalo division of **Fedders-Quigan Corp.**

**Mark W. Cresap Jr.** was named president, **Westinghouse Electric Corp.**, Pittsburgh. Executive vice president since 1955, he becomes chief administrative and operating officer. **Gwilym A. Price**, president since 1946, and chairman since 1955, remains chairman of the board. **John K. Hodnette** was elected executive vice president. **E. V. Huggins** becomes chairman of the executive committee and vice president. **George G. Main** retains the post of treasurer, and becomes vice president-finance. **Francis E. Dalton** was elected controller. **Carlisle P. Myers** continues as general counsel, and was elected corporate secretary. **Russell B. Read**, planning director, continues that assignment and was elected assistant treasurer.

**Richard E. Petts** was appointed plant engineer of the general office engineering staff of **Doehler-Jarvis Div.**, National Lead Co., Toledo, Ohio.

**C. A. McTaggart**, northwestern division manager for **Armco Drainage & Metal Products Inc.**, Middletown, Ohio, was elected a vice president of the company, a subsidiary of **Armco Steel Corp.**

**Albert P. Gagnebin** and **L. E. Grubb** were appointed assistant vice presidents of **International Nickel Co. Inc.**, New York. Mr. Gagnebin continues as manager of the nickel sales department. Mr. Grubb, who has been general superintendent of the **Huntington, W. Va., Works**, will be in charge of labor relations at all U. S. plants of the company. He transfers to the New York office.

**John C. Cushing** was appointed assistant vice president-commercial of the Supply Division of **U. S. Steel Corp.**, Chicago. He was director of industrial relations for the division.

**E. M. Branch** was appointed engineering representative of the stainless processing division of **Wall Colmonoy Corp.** He has been assigned to the Montebello, Calif., plant. He was with **Calmec Mfg. Co.**'s heat treating division in Los Angeles.

**Ivan L. Wiles** retires Dec. 31 as executive vice president of **General Motors Corp.**, Detroit.

**Howard C. Ness** was appointed manager, cost and statistics; **Harry F. Wox**, assistant manager-works accounting at **American Steel & Wire Div.**, U. S. Steel Corp., Cleveland.

**Clinton E. Smith**, assistant to the general sales manager, **Pratt & Whitney Co. Inc.**, Hartford, Conn., was named administrative sales manager for the machinery, cutting tool, and gage divisions. This is a new executive post, established to co-ordinate administration of the company's sales organization. In a major revision of sales territories for the cutting tool and gage divisions, **William C. Mullin** heads sales of these products in a territory that parallels the East and the West Coast. **Albert F. Miller Jr.** will manage cutting tool and conventional gage sales in this territory. Both have headquarters in Hartford. **Alford H. Johnson**, located in Chicago, will manage gage and cutting tool sales in the midcontinent sales territory. Mr. Mullin was sales manager for instrument gages. Mr. Miller was sales manager, cutting tools and conventional gages. Mr. Johnson has served as a sales engineer.

**William K. Sinclair** was elected vice president-sales of **Super Steels Inc.**, Cleveland.

**Howard W. Read**, former vice president-comptroller, **Alan Wood Steel Co.**, Conshohocken, Pa., was elected vice president-planning and control. He assumes responsibility for all company planning, financial, and corporate secretarial functions. **Lawrence G. Campbell** was elected controller, supervising accounting functions. **Gordon R. Kreckner**, former supervisor of accounting, and **Augustus D. Lagomarsino**, budget director, were elected assistant controllers, and





**H. CLAY OLIVER**

*Fulton Sylphon Div. appointments*



**FRED COKER**



**RICHARD S. NEWLIN**

*Anaconda Co. executive positions*



**THOMAS A. CAMPBELL**

William M. Webb was elected secretary.

H. Clay Oliver was made general superintendent, **Fulton Sylphon Div.**, Knoxville, Tenn., Robertshaw-Fulton Controls Co. He is succeeded as purchasing agent by **Fred Coker**, former assistant purchasing agent.

**Thomas J. Payne** was elected treasurer of **J. Bishop & Co. Platinum Works**, Malvern, Pa. He joined the company in 1956 as assistant treasurer. Mr. Payne succeeds Vice President **Charles W. Stones** as treasurer.

**William R. Magness** was named director, research and technical department, **Luria Bros. & Co. Inc.**, New York. He was in charge of operation analysis and management research for **Battelle Memorial Institute**, Columbus, Ohio.

**Frank Randall** was appointed president, **Amperex Electronic Corp.**, Hicksville, N. Y. He was vice president-general sales manager.

**Richard S. Newlin** was made vice president - operations, **Anaconda Co.**, New York. He was vice president-mining operations. Vice President **Thomas A. Campbell** assumes added duties in the new post of vice president-Latin American affairs. He also is president of **Anaconda Sales Co.** and four other subsidiaries. Since 1952 he has been executive vice president of **Chile Exploration Co.** and **Andes Copper Mining Co.**, affiliates, and is succeeded by **Charles M. Brinckenhoff**, former vice president.

**Reo Div.**, **White Motor Co.**, appointed **Walter W. Kling** manager of the Philadelphia district sales office; **William T. Giles**, manager, Cincinnati district sales office.

**Edward P. Sandbach** was made chief metallurgist, **Mackintosh-Hemphill Div.**, **E. W. Bliss Co.** He heads the metallurgical departments in the division's Pittsburgh and Midland, Pa., plants. He was with **United Engineering & Foundry Co.** Mr. Sandbach replaces

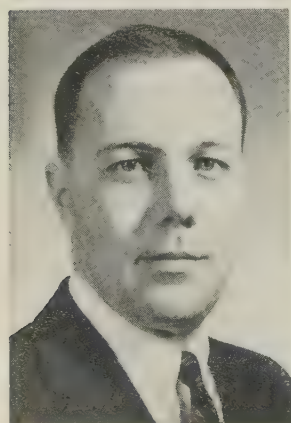
**Charles E. Peterson**, recently named manager of manufacturing operations for the two plants.

**Leonard C. Schmidt**, works manager, was named general sales manager, **Worcester Pressed Steel Co.**, Worcester, Mass. **Carter C. Higgins**, company president, takes over the shop operation and the presidency of the newly acquired subsidiary, **Mutual Products Co. Inc.**

**T. J. Crocker**, manager, **Bethlehem Mines Corp.**, division of **Bethlehem Steel Co.**, Bethlehem, Pa., will retire Jan. 31.

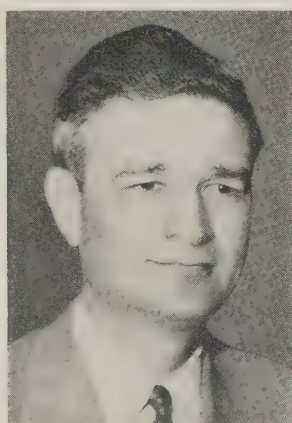
**Kenneth A. Matticks** fills the new post of manager of product development-stainless steel sales division, **Crucible Steel Co. of America**, Pittsburgh. He was a stainless contact metallurgist in the central metallurgical office.

**A. E. R. Peterka** was appointed manager of marketing service for **Lamson & Sessions Co.**, Cleveland. He continues to direct aircraft



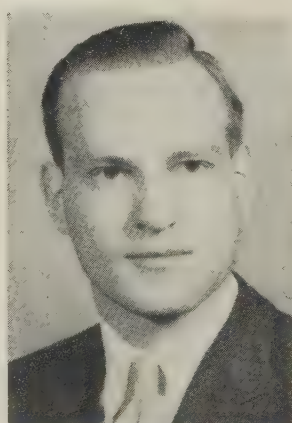
**WILLIAM R. MAGNESS**

*joins Luria Bros.*



**FRANK RANDALL**

*Amperex Electronic president*



**EDWARD P. SANDBACH**

*Mackintosh-Hemphill post*

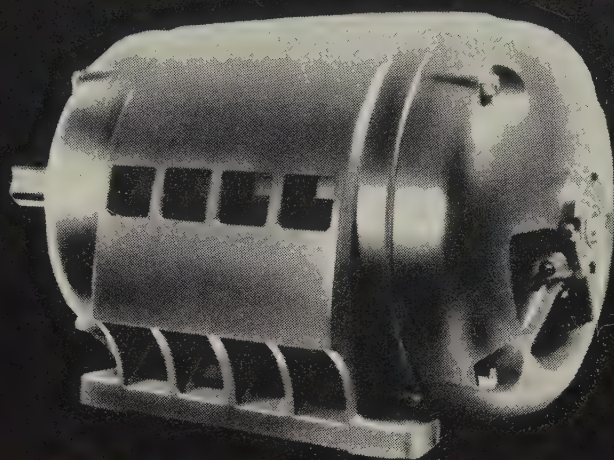


**A. E. R. PETERKA**

*Lamson & Sessions marketing*



**Your specialized drive requirements**



**Should meet their Master**

Master Units Combine into Engineered, Customized Package  
Drives—Providing the Right Shaft Speed, the Right Construction  
Features, the Right Mounting. Why Put Up With Makeshift Assemblies?

### Engineers and Manufacturers of

Electric Motors .....  $\frac{1}{8}$  to 400 H.P.

Gearmotors .....  $\frac{1}{8}$  to 125 H.P.

Variable Speed Drives .....  $\frac{1}{8}$  to 30 H.P.

Unibrake Motors .....  $\frac{1}{8}$  to 150 H.P.

Fluid Drive Motors .....  $\frac{1}{2}$  to 15 H.P.

Alternating current motors, direct current motors, generators... open, enclosed, explosion proof... with 5 types of gear reducers... with electric brakes... with mechanical or electronic variable speed units... with fluid drives... Master has them all and so can be completely impartial in helping to select the one best drive for you.

**MASTER ELECTRIC MOTORS**



**THE ELECTRIC COMPANY, Dayton 1, Ohio**





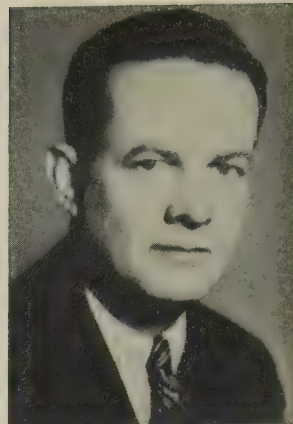
O. W. CARPENTER



W. C. MESSINGER



E. M. RHODES



G. H. WOODLAND

*Chain Belt executive vice president; three vice presidents*

technical and specialty sales, advertising and sales promotion.

William R. Johnson was appointed chief research metallurgist; Richard J. McClusky, chief machine design and development engineer at Associated Spring Corp.'s research center in Bristol, Conn. Mr. Johnson will be responsible for the basic research being carried on at the Bristol center, directed toward the application of new and improved materials and advanced metallurgical processing techniques to the problems of spring design and fabrication. Mr. McClusky will supervise the center's research and development of mechanical actuation and other principles of mechanical engineering related to spring design, as well as new forming machines and methods. Mr. Johnson has been research metallurgist for the corporation's Wallace Barnes Co., division in Bristol. Mr. McClusky joins Associated Spring after five years as a project engineer with the Stanley Works, New Britain, Conn.

G. T. Willey, corporate vice president-manufacturing, Martin Co., Baltimore, assumes additional duties as vice president-general manager of a new division, created to speed on-the-spot arrangements for launching the Navy Vanguard-earth satellite, and the Air Force Titan-intercontinental ballistic missile. The new division has equal status with the Baltimore, Denver, and Orlando, Fla., divisions. Mr. Willey is in charge of all Martin activities in the Patrick Air Force Base and Cape Canaveral, Fla., area, including testing of the USAF Matador tactical missile.

O. W. Carpenter was elected executive vice president, Chain Belt Co., Milwaukee, with direct responsibility for current operations of the company. Former vice president-construction machinery section, he is succeeded by W. C. Messinger, who was manager, construction machinery division, Milwaukee. In addition, Mr. Messinger assumes executive responsibility for General Road Machines Div., Niles and Newton Falls, Ohio; Burmeister Div., Milwaukee; and Chain Belt's California plant operation. E. M. Rhodes, manager, industrial equipment section, was elected vice president of the section. G. H. Woodland was elected vice president-marketing. He was general sales manager, industrial equipment section.

American Steel & Wire Div., U. S. Steel Corp., Cleveland, promoted Charles E. Cronauer Jr. to assistant to general traffic manager; Norman S. Brubeck to manager, transportation, to succeed Mr. Cronauer. Edward H. Finneran fills a new post of traffic manager, western area, with headquarters in Chicago. His responsibility includes traffic functions for Cyclone Fence Department, and at the Duluth, Joliet, Ill., and Waukegan, Wis., plants of AS&W.

Thomas E. Smith and Walter J. Blaha joined the chemical plant engineering department of Pittsburgh Coke & Chemical Co., Pittsburgh. Mr. Smith will be a chemical engineer in the department's process improvement section. Mr. Blaha will be maintenance engineer of the chemical plant's maintenance engineering section. Mr. Smith

was with Crown Cork & Seal Co. Mr. Blaha was at the Baltimore refinery of Esso Standard Oil Co.

Vickers Inc. appointed Roy Golze district manager in the Philadelphia area.

## OBITUARIES...

James H. Critchett, a retired vice president of several divisions of Union Carbide Corp., died Dec. 17 in Orleans, Mass.

Charles H. Hart, president-general manager, Hart Bros. Machine Co., Clarksburg, W. Va., died Dec. 3.

Thorsten Y. Olsen, 78, chairman, Tinius Olsen Testing Machine Co., Willow Grove, Pa., died Dec. 10.

John O. Hulting, 68, founder and president, Perfection Tool & Metal Heat Treating Co., Chicago, died Dec. 14 in Winter Haven, Fla.


Robert Cady, 46, treasurer, and sales manager, Ajax Coupling Co., Westfield, N. Y., died Dec. 12.

Jack Epstein, 57, founder and president, Allmetal Screw Products Co., Garden City, N. Y., died Dec. 15.

Arthur Raske, 63, president, Nu-Matic Grinders Inc., Cleveland, died Dec. 14. He also was president of Enterprise Machine Parts Inc., Detroit.

Charles F. Beckwith, 70, retired executive, A. O. Smith Corp., died Dec. 16 in New York.





**YOU CAN'T  
BARGAIN  
WITH SAFETY**

This 240,000-pound steam drum, built by Combustion Engineering for a large generating plant, is here being hoisted 120 feet into position by strong wire rope. It's a striking example of how . . .

## **safety rides on quality wire rope**

You may never hoist loads as large as this 120-ton drum. But *safe, top quality wire rope is just as important to your own operations.* For, although the price of a "bargain" rope would be less, failure of such a rope could cost you thousands of dollars in wrecked equipment. Don't be a victim of false economy. Buy a wire rope that's a quality rope—buy Wickwire Rope.

5339



**LOOK FOR THE  
YELLOW TRIANGLE**

**PRODUCT OF WICKWIRE SPENCER STEEL DIVISION  
THE COLORADO FUEL AND IRON CORPORATION**

**THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso  
Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln (Neb.) • Odessa (Tex.) • Oklahoma City • Phoenix • Pueblo  
Salt Lake City • Tulsa • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro  
Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.)  
New Orleans • New York • Philadelphia



# Researchers Develop Better Metals

Substantial success in programs to perfect stronger and lighter metals with resistance to higher temperatures is reported by official of American Society for Metals

RESEARCHERS continue to direct their efforts toward the development of metals that are stronger, lighter, and have increased high temperature resistance. Considerable success was achieved in 1957, says William H. Eisenman, secretary, American Society for Metals, Cleveland.

The 2000° F level is the "heat to beat" now. Ultimately, the goal is expected to move toward 5000° F. "It must be achieved soon if we are to keep pace with the foreseen needs," Mr. Eisenman says.

**Accomplishments** — Introduction of a new research concept has resulted in the compounding of special alloys to meet specific physical and mechanical properties.

For example, a new set of alloys with improved properties excellent for high temperature gas turbine uses has been perfected.

The past year saw advances in metals for structural uses that were not possible formerly. Vanadium, columbium, and tantalum were originally used only as alloying elements. They are now being produced in ductile form suitable for fabrication. Prices are expected to come down as uses for these metals are developed, Mr. Eisenman reports.

Unusual metals are finding new or expanded applications. Ductile zirconium is being used as a fuel coating in nuclear reactors. Beryllium has applications in atomics, and the day is not far off when it may compete structurally with aluminum and magnesium.

Columbium is a nuclear metal with great tensile strength and corrosion resistance at high temperatures. It does not readily absorb neutrons to slow down atomic reactions. It also withstands high temperatures in jets and rockets.

**Economy Sought**—Because of diminishing supplies of quality ore and higher equipment and labor costs, researchers are seeking a cheaper method of direct reduction from ore to pure iron powder, or steel, bypassing the blast furnace.

New uses of unusual metals: Tantalum can be rolled into thin foil of great strength to make an excellent insulation material for electric devices; foamed aluminum has been perfected as a lightweight stiffening element for aircraft wings and bulkheads. It has great strength-weight characteristics.

Aluminum production was given a boost in 1957 with the introduction of a 50,000-ton forging press. Savings in material are reported to be 67 per cent. Formerly, an 870-lb forging was needed to yield a 230-lb finished part. The new press does the job with a 289-lb rough forging.

## Taylor-Winfield Licensed

Designers for Industry Inc., Cleveland, has licensed Taylor-Winfield Corp., Warren, Ohio, to manufacture a line of tangent bending, roller table bending, and tumble die bending machines. The equipment was made by Struthers Wells Corp., Titusville, Pa.

## Ward LaFrance Diversifies

Ward LaFrance Truck Corp., Elmira, N. Y., has entered the heating and ventilating field: It will manufacture, promote, and sell Gannon heating and ventilating units.

## Forms Warehousing Firm

John G. Berry, founder and former president of Kenilworth Steel Co., organized Berry Steel Corp. The new warehousing firm will conduct its operations at 2 Mark Rd., Kenilworth, N. J.

## Cleaver-Brooks Sells Unit

A newly formed company, Industrial Combustion Inc., has acquired the Conversion Burner Div. of Cleaver-Brooks Co., Milwaukee, and will establish the business in Monroe, Wis. J. Verne Resek is president of the new company.

## Carborundum Joins Units

Carborundum Co., Niagara Falls, N. Y., is integrating its Stupakoff Div. at Latrobe, Pa., Global Div. at Niagara Falls, and Refractories Div. at Perth Amboy, N. J., into one unit—the Refractories Div.—effective Jan. 1. The Stupakoff sintered oxide cutting tool project formerly at the Stupakoff Div., will be assigned to the new products branch of the Research & Development Div. Officers of the new Refractories Div. will be: General manager, Boyd M. Johnson; assistant general manager in charge of sales, R. A. Barr; assistant general manager in charge of operations, A. L. Leo-Wolf.

## Expands Instrument Plant

Heiland Div., Minneapolis-Honeywell Regulator Co., Denver, added 12,000 sq ft to its plant, an increase of 25 per cent. The division makes oscillographic instruments.

## Virginia Steel To Expand

Virginia Steel Co. plans to construct facilities to produce long bar joists, not now made in the area. If the firm is prevented from expanding its Birmingham plant, the project will be transferred to its Richmond, Va., plant.

## Re-Enters Rutile Market

Metal & Thermit Corp., New York, has re-entered the domestic rutile and ilmenite market with the opening of a new mine and ore processing plant in Hanover County, Virginia. Representing an investment of \$1,250,000, the new facility will supply 5000 tons of rutile annually, or about 12 per cent of U. S. requirements next year. Australia, which produces about 90 per cent of the world's rutile, supplies about 70 per cent of our requirements. The processing plant will have a capacity of 100 tons of ore an hour. Domestic consumption of rutile amounted to 50,000 tons in 1956, compared with an annual average of 11,000 tons in the 1947-51 period.

The company also has announced the sale of its Thermit welding business to Reade Mfg. Co. Inc., Jersey City, N. J. H. E. Martin,



president, says Metal & Thermit's growth plans call for concentration of activities and expansion in the production and marketing of chemicals, metals, and arc welding electrodes and equipment.

## Baker Sells Product Lines

Baker Bros. Inc., Toledo, Ohio, sold its sensitive drilling machine and contour shear lines to Lennox Furnace Co., Machine & Tool Div., Lima, Ohio. W. V. Trask has been appointed sales manager for the Lennox products.

## Clark Forms New Divisions

Clark Controller Co., Cleveland, established four new product divisions: Automation Div. (engineered control systems and standardized controls for applications requiring integrated control systems); Packaged Drive & Control Div. (packaged speed control drives and control centers); Crane & Mill Accessory Controls Div. (control equipment for material handling, mill auxiliaries, and accessory drives); and Standard Products Div. (general-purpose starters, relays, limit switches, and similar equipment). Clark also has a Renewal Parts Div. and American Electric Switch Div. R. L. Puette has been named general divisional manager for the heavy-duty and specially-engineered equipment group; B. H. Carlisle for the Standard Products, Renewal Parts and American Electric Switch divisions.

## Organizes Research Group

Townsend Co., New Brighton, Pa., organized a research and development subsidiary, Townsend Engineered Products Inc. with headquarters in Santa Ana, Calif. TEP's broad field will be equipment and components for the aircraft, automotive, petroleum, ordnance, transportation, and armament industries, plus studies involving special metals, combat vehicles, and human engineering. President of the subsidiary is Cmdr. G. O. Noville, USNRF (ret.); vice president-administration, R. H. Aaron; vice president-engineering, S. L. Sola; and production superintendent, C. F. Schultz.

## Detroit Harvester Builds

Detroit Harvester Co., will erect a building for its executive offices and a research center on Greenfield Road, Detroit. It will provide 32,000 sq ft of working space. The firm operates seven divisions which produce automotive parts; hardware for automobiles and household appliances; power mowers; spray booths, ovens, washers, and other industrial plant equipment; agricultural implements; permanent mold aluminum castings; coolant pumps; and tractor power take-offs.

## May Build Uranium Mill

Vitro Minerals Corp. and Atlas Corp., New York, have submitted to the Atomic Energy Commission, Washington, a joint proposal to build a uranium mill (1000 tons daily capacity) in Wyoming. It is one of several mill proposals under consideration by the AEC.

## Bergren Steel Corp. Formed

Bergren Steel Corp. has been formed in Oakland, Calif. The firm will specialize in distributing steel plates and will also stock roofing, galvanized corrugated sheets, expanded metal, and steel grating. E. G. Bergren is president and principal stockholder.

## Enters Fabrication Field

Norlegest Corp. has been organized in Buffalo to machine and fabricate metal parts and equipment. Norman C. Drechsel Jr. is president.



## CONSOLIDATIONS

Dumont-Airplane & Marine Instruments Inc., Clearfield, Pa., purchased the Le John Mfg. Co. Inc., Huntington, W. Va., maker of fans, blowers, hair dryers, and other equipment.

Federal Shock Mount Corp., New York, maker of vibration and shock mountings for equipment used in missiles and aircraft, has

been purchased by Massachusetts Mohair Plush Co. Inc., that city. Officers of Federal include: President, Dr. Bela K. Erdoss; executive vice president, D. H. Vance; and vice presidents, S. Silverman and S. Kamin.

Bell & Howell Co., Chicago, purchased Inserting & Mailing Machine Co., Phillipsburg, N. J. The property will be operated as a subsidiary under the name of Bell & Howell Phillipsburg Co.



## NEW ADDRESSES

Vernon Steel Corp. moved to a 13,000 sq-ft plant at 5250 W. Washington Blvd., Los Angeles, Calif.



## ASSOCIATIONS

West coast screw machine product manufacturers have established the newest district of the National Screw Machine Products Association, Cleveland.



## NEW PLANTS

Industrial & Scientific Products Div., Curtiss-Wright Corp., moved to larger quarters on Quaker Bridge Road, Princeton, N. J. The division specializes in ultrasonic cleaning and testing equipment.

Servomechanisms Inc., Westbury, N. Y., plans to establish a \$3-million research engineering and development center at Santa Barbara, Calif.

Early next year, Pittsburgh-Des Moines Steel Co., Pittsburgh, will start construction of a steel fabricating plant at Church and Cedar Avenues, Fresno, Calif. Cost of the expansion project: About \$500,000.

Elgin National Watch Co., Elgin, Ill., dedicated its research and development center for work on miniaturization. Near Los Angeles, it will be operated by Elgin's Micronics Div. The firm's Abrasives Div. has expanded its product line to include diamond mounted points and hones.



# HIGH FLYING FORGINGS

## KEY TO FORGINGS SHOWN:

1. Missile Ring Splice...  
Aluminum - 54 lbs.  
20 inches
2. Missile Rib...  
Titanium - 95 lbs.  
98.50 inches
3. Missile Fin...  
Aluminum 8 lbs.  
30 inches
4. Accumulator...  
Aluminum - 282 lbs.  
30 inches
5. Spar Fin...  
Aluminum - 65 lbs.  
59 inches

In the Jet — Missile — Rocket Age, dependable forgings by Wyman-Gordon are meeting the challenge of progress. Whether for Defense or in the interest of Satellite Science, there is no substitute for Wyman-Gordon quality, experience and know-how.

## WYMAN-GORDON COMPANY

Established 1883

FORGINGS OF ALUMINUM • MAGNESIUM • STEEL • TITANIUM  
WORCESTER 1, MASSACHUSETTS  
HARVEY, ILLINOIS • DETROIT, MICHIGAN



# Technical Outlook

**NEW MATERIALS**—A new family of materials based on intermetallic compounds will emerge during the next 25 years to help conquer problems of the heat barrier, predicts Dr. Clarence H. Lorig, technical director, Battelle Memorial Institute, Columbus, Ohio. Speaking at a plant dedication in Los Angeles, he said: "The boundary between metals and ceramics will become less distinct . . . there will be further development of cermet—bodies made up predominantly of small particles or fibers of refractory materials held together with ductile metal." Dr. Lorig also foresees wide use of molybdenum, tungsten, tantalum, and columbium base alloys in composite structures with ceramics and in all-metal structures. Molybdenum and tungsten will be protected by metallic, self-healing coatings, or used uncoated where conditions are not oxidizing. Of these metals, he predicts molybdenum will be the most highly developed and most commonly used.

**CLAD PIPE**—Stainless clad, carbon steel pipe as small as 4 in. in diameter is being produced by welding. The announcement was made by Lukens Steel Co., Coatesville, Pa., at the 26th Exposition of the Chemical Industries in New York. The new pipe will cut costs for handling corrosive liquids. Techniques for making it were developed by Lukens and Youngstown Welding & Engineering Co.

**BOON TO PRECISION**—People concerned with the measurement of gage blocks often turn to the interferometer for picky readings of face parallelism. The practice has been to wring the block to an optical flat and to measure the angle between the block surface and the optical flat with light rays. A new interferometer (developed at the National Bureau of Standards) does away with hand wringing. The result: The block doesn't have to be handled, and there's no wait while the temperature of the block reaches equilibrium. The new device

measures the angle between opposite block faces. It's said to be extremely simple to operate, and the angle is read on a scale, so no computation is necessary.

**WIPE FORMING TREND**—Air inlet ducts are being wipe formed at Ford Motor's stamping plant, Dearborn, Mich. The equipment (made by Cyril Bath Co., Solon, Ohio), is said to produce 1500 parts an hour from strip steel with less waste than a conventional deep drawing operation. The move is further evidence of automakers' interest in wipe and stretch forming.

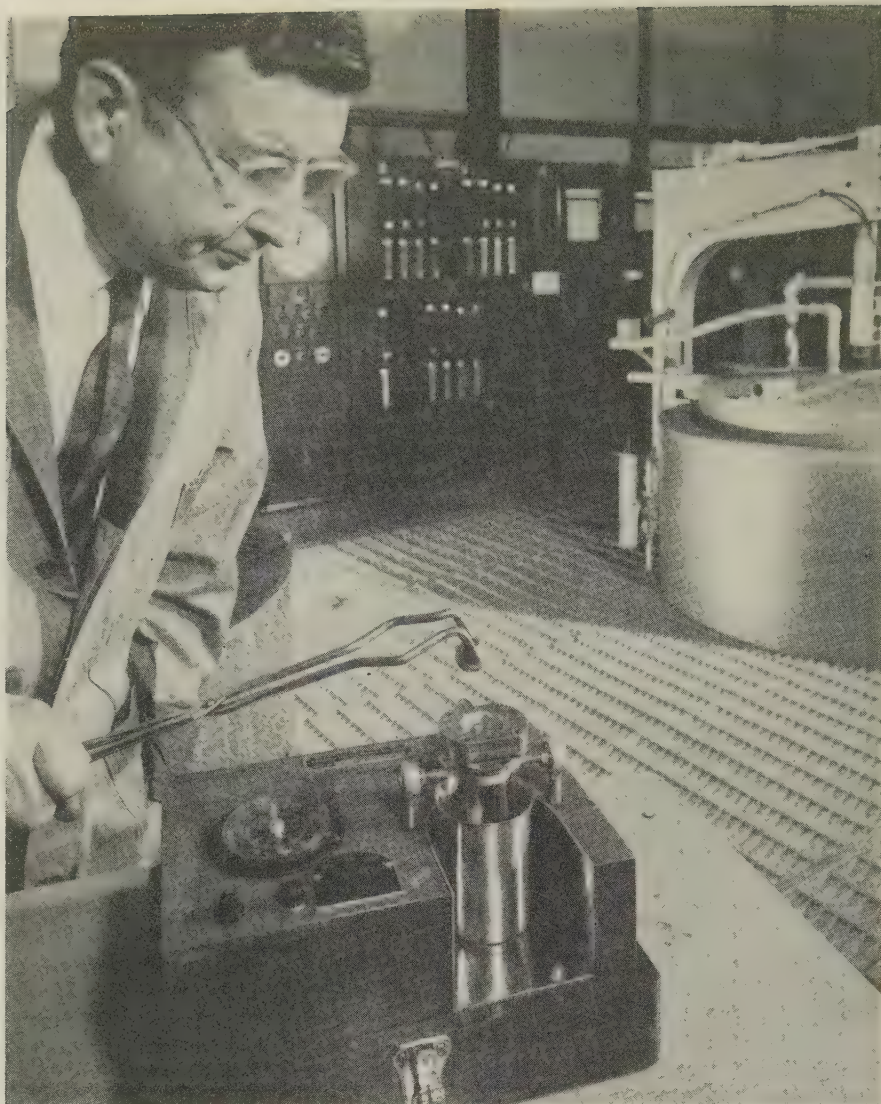
**LARGE VACUUM FURNACE**—The vacuum arc furnace operating at Carborundum Metals Co., Akron, N. Y., double melts zirconium, producing ingots 16 in. in diameter which weigh more than a ton. Westinghouse Electric Corp., Pittsburgh, built the 38-ft high, consumable electrode furnace.

**SHELL MOLDED STEEL**—High quality steel castings can be made by using forsterite grains (magnesium silicate) in resin bonded shell molds, says Harbison-Walker Refractories Co., Pittsburgh. The chilling effect of the grains develops a strong steel skin which resists outside gas pressure and inside ferrostatic pressure. The material also comes in 100 and 200 mesh flour.

**CHEAPER EXTRUSIONS**—Compared with forgings, cast billets have cut titanium extrusion costs nearly 40 per cent, say Curtiss-Wright Corp., Buffalo. Castings take about half the raw material required by other methods, conserving critical elements. The technique took two years to develop. It was sponsored by the Air Materiel Command, Wright Patterson Air Force Base, Dayton, Ohio.



This test for quenching speed correlates with transverse hardness measurements. It can be used to compare oils or salts and to evaluate other factors which change quenching rate



Nickel ball, heated to 1600° F, is dropped into a cage suspended in a cup of quenching oil. Here's how the cooling ability of a quenchant is found: A timer measures the interval from the instant the ball goes into the oil until it becomes magnetic (670° F)

## New Way To Measure Quenching Speed

AN IMPORTANT requirement in the heat treatment of steel is the extraction of heat from the metal in a way to obtain the desired physical properties.

The problem of getting the right quenching rate to meet specifications of the many steels used in industry has plagued heat treaters for years. Recognizing the need for a method to accurately com-

pare the heat extraction properties of numerous quenching media, the Process Development Section of General Motors Corp. devised the magnetic quench test.

By E. A. BENDER  
and H. J. GILLILAND  
Process Development Section  
General Motors Corp.  
Detroit

**Principle**—The test takes advantage of a property: Metals lose their magnetism when they are heated above a certain temperature (known as the Curie point) and regain it when cooled below this temperature. Any magnetic material may be used; in our preliminary work, several steels were investigated.

We selected pure nickel for re-



peated testing because of its non-scaling characteristics and its resistance to cracking when repeatedly heated and quenched. Also, it does not require heating in a controlled atmosphere furnace—a desirable economic feature. A spherical shape with a diameter of  $\frac{7}{8}$  in. and weighing about 50 grams was selected for the test.

**Method**—The nickel ball is heated to 1600° F in either an air or controlled atmosphere furnace. After uniformity of heat is attained, it is quenched in a magnetic field surrounding the quench sample under test. The time required for the ball to cool from 1600° F to the Curie point of nickel (at which instant it is attracted by the magnet) is a measure of the heat extraction power of the quenchant.

(The Curie point of pure nickel is 670° F. It is below the nose of the S curve in the isothermal trans-

**TABLE I**

Test Oil	Quench Rate (Seconds)
<b>Group A</b>	
Oil E	9.8
Oil A	10.0
Oil C	10.2
<b>Group B</b>	
Oil B	11.2
Oil F	12.2
Oil D	14.4
<b>Group C</b>	
Oil S-7	17.8
Oil S-9	19.6

formation for most steels.)

**Check Procedures**—To evaluate the method, six premium oils, two straight mineral oils, and straight mineral oils with special proprietary additives were used as samples.

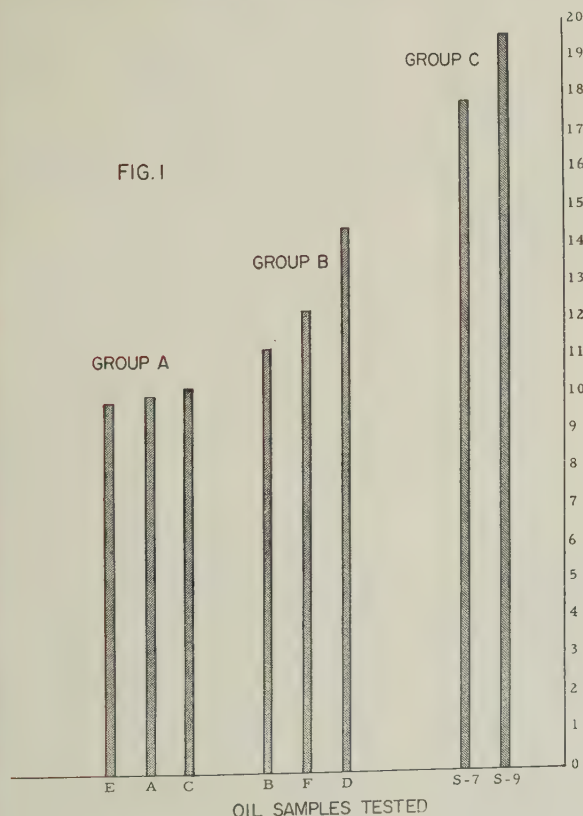
The oils were evaluated by measuring the time required for the standard nickel ball to regain its magnetism. This gives a direct comparison of quenching rates: The faster the oil, the shorter the time required for the nickel to regain its magnetism.

Results are given in Table 1 (left) and shown graphically in Fig. 1. The premium oils are identified by symbols, A through F; the straight mineral oils by their designations, S-7 and S-9.

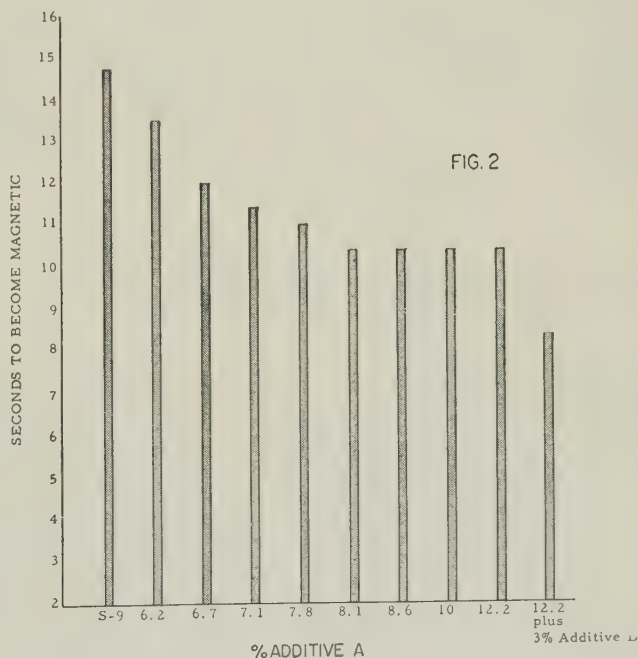
The results were established by several hundred repetitive tests in still oil (200 cc) at room temperature. Relative quenching speeds were substantiated by agitation up to 300 ft per minute and under heat at 130° F.

The test was used to study the effect of proprietary additives in straight mineral oil. Fig. 2 illustrates the influence of varying percentages of a single additive on

## Results of Magnetic Quench Test



Premium oils (A, B, C, D, E, F) and mineral oils (S-7, S-9); 50 gram nickel ball; 200 cc oil; room temperature; no agitation

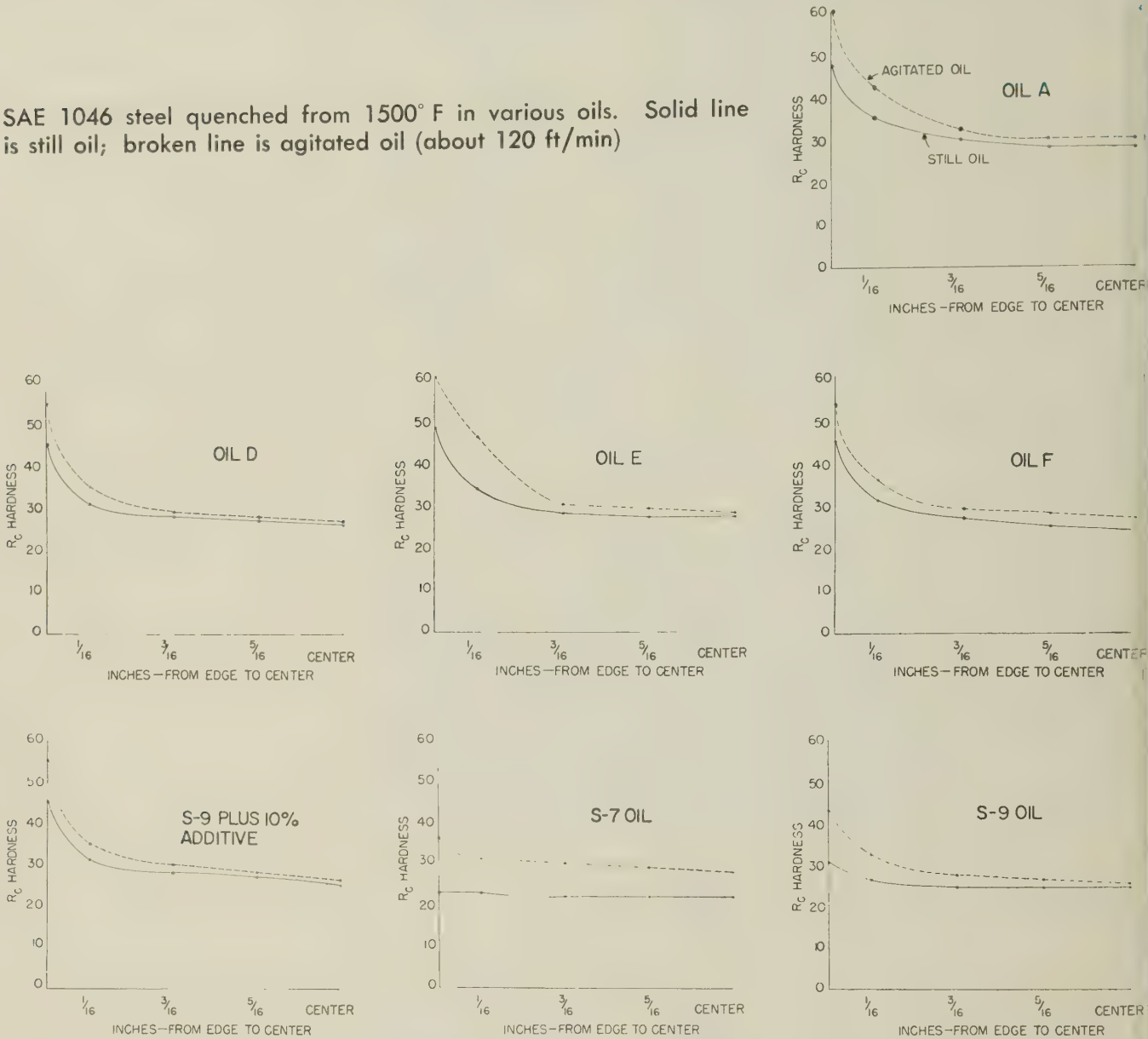


Mineral oil (S-9) containing additives—40 gram nickel ball; 180 cc oil; room temperature; no agitation



# Transverse hardness curves correlate with quenching test results

SAE 1046 steel quenched from 1500° F in various oils. Solid line is still oil; broken line is agitated oil (about 120 ft/min)



the quenching power of S-9 oil. Additions in excess of 8.1 per cent of the proprietary compound do not increase the quench speed of the oil, except when a second compound is introduced. But the ultimate quenching speed does not equal that of the best premium oils.

(At the time of these tests, experiments were also made with a 40-gram nickel sphere and 180 cc of quenching oil. The conclusion: In comparing oils, results are relative so long as the nickel ball and oil sample remain constant.)

**Hardness Tests**—Because of the importance of correlating test results with shop practice, a series of transverse hardness tests were made on SAE 1046 steel quenched in various oil samples. The test bars were  $7/8$  in. in diameter, 3 in. long, and had two surfaces 180 degrees apart. They were ground flat before heat treatment to get accurate surface hardness measurements.

The test pieces were austenitized at 1500° F in an electric furnace having an atmosphere of endother-

mic gas. Quenching was done in 2 liters of still and agitated oil, with an oil velocity of about 120 ft per minute.

Each bar was sectioned, and transverse hardness checks were made. The curves on this page show results of the hardness tests. The correlation between the magnetic test and the transverse hardness tests is excellent.

The magnetic quench test was compared with two commercial test procedures used in industry. After exhaustive study, these con-



## Results of transverse hardness test (Rc scale) on SAE 1046 steel quenched from 1500° F

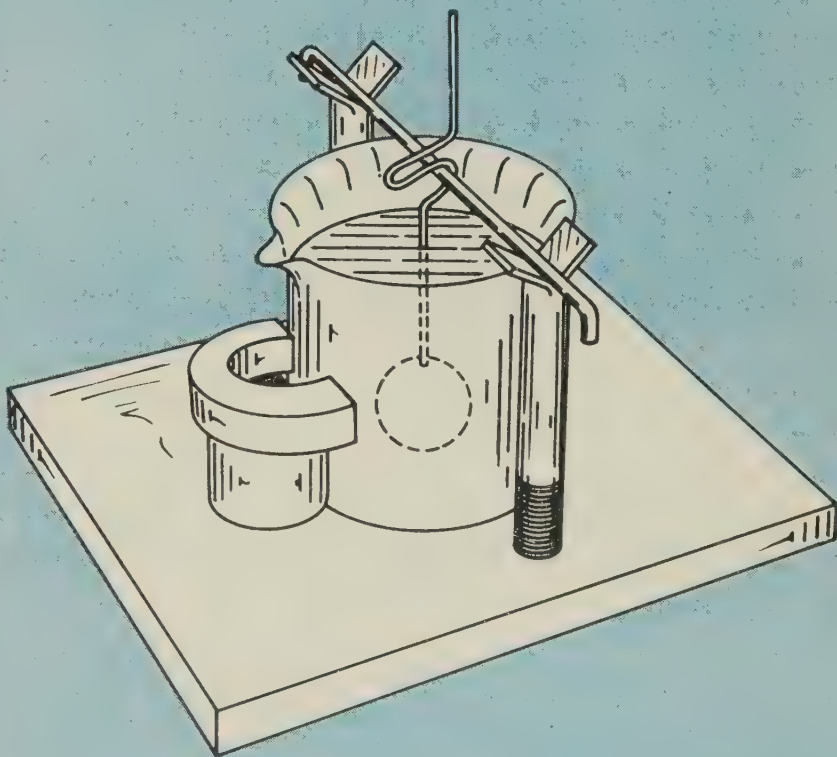
Position of Test from Outside Dia.	OIL S-7		OIL S-9		OIL A		OIL E		OIL D		OIL F		OIL S-9 plus 10% ADDITIVE	
	Still Oil	Agitated Oil	Still Oil	Agitated Oil	Still Oil	Agitated Oil	Still Oil	Agitated Oil	Still Oil	Agitated Oil	Still Oil	Agitated Oil	Still Oil	Agitated Oil
O. D.	23	36	30	43	47.5	60	48	60	45	55	45	54	45	55
1/16"	23	31	26	32	35	42	34	46	31	35	31	36	31	35
3/16"	22	30	24	27	30	32	28	30	28	29	27	29	28	30
5/16"	22	29	24	26	28	30	27	29	27	28	25	28	27	28
7/16" Center	22	28	24	25	28	30	27	28	26	27	24	27	25	26

clusions involving the competitive processes were reached: 1. The results do not coincide with transverse hardness tests. 2. They are not reproducible. 3. One competitive test was difficult to perform, requiring two operators.

**Evolution of Apparatus**—The original equipment for the magnetic quench test (shown on this page) consisted of a horseshoe magnet, a 250-cc beaker, a stop watch, and a hanger supported across a rod. The electrical device shown on Page 56 was later developed to simplify the method and eliminate human error in repeated testing. (This apparatus was demonstrated by E. F. Houghton & Co. at the Metal Show in Chicago.)

A portable device (consisting of a single coil, a balanced bridge network, an amplifier, and an electric timer) is being tested for use in production quenching systems.

The system is not limited to quench tests of oils. It may be used to evaluate the extraction rates of heat from gases and salts, to study the inhibiting effects of sludge buildup, to examine the effects of surface condition of heat treated parts on quenching, and to evaluate the inhibiting effect of salts adhering to the piece during quenching.



Original equipment for the magnetic quench test consisted of a horseshoe magnet, a 250-cc beaker, a stop watch, and a hanger supported across a rod

\* An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.





Welder is attaching a heavy bar across critical weld on spud legs of offshore drilling rig. The procedure makes the joint stronger than a perfect weld and permits lighter, faster welds

## Expert Views Strap Welds

R. G. LeTourneau says they are the secret of much of his success. He prefers them because straps or bars welded across a critical weld distributes stress, increasing safety margin

THERE are two schools of welding, says R. G. LeTourneau: One teaches the need for perfect welds; the other applies straps to be sure.

One of the leaders in the production of superheavy equipment,

he believes that strap welds cost less than conventional ones and "stand the gaff" better. The objection that they don't look good is a matter of education, he feels.

**Origin**—Such welding takes its

name from the heavy straps which are welded across every critical weld which receives excessive stress.

The system is used on LeTourneau's giant equipment, which ranges from log handlers to 4000-ton mobile offshore platforms. Mr. LeTourneau says the welds almost never fail and estimates his margin of safety at 50 per cent.

**Proof**—The technique can save up to 94 per cent of the cost of making a weld. Here's how:

A ½-in. weld is at least one-fourth as strong as a 2-in. weld.

But it requires only one-sixteenth as much metal, and it can be made sixteen times faster.

In butt welding 2-in. plates, it's cheaper to put in a ½-in. weld from both sides and apply a few straps to make up for the unwelded center. Welds made that way cost one-fourth as much as straight through, 2 in. welds, says Mr. LeTourneau.

That kind of an approach makes possible an economical weld which is 50 per cent stronger.

**High Tensile Problem**—It is difficult to make welds which are always as strong as the base metal (100 per cent welds), especially in metals with tensile strengths off 120,000 psi. (LeTourneau uses a great deal of high strength steel in its offshore, mobile platforms. One member is shown at left.)

**Design**—Not all welds require straps, Mr. LeTourneau points out. Perhaps 75 per cent are not required to carry a full load. A good designer makes them that way. For example, a simple secondary truss member might be three times heavier than necessary to hold main tension and compression members in line. Made of lighter material, they would be dented by handling. To make them heavier but smaller would increase the slenderness ratio (L/R) too greatly. The joints for such sections simply don't require full strength welds, says Mr. LeTourneau.

**History**—Mr. LeTourneau started welding more than 50 years ago, before acetylene or electric welding was known. He made his welding gas by dissolving zinc in sulfuric acid.

When acetylene was first introduced, he made his own welding torch.



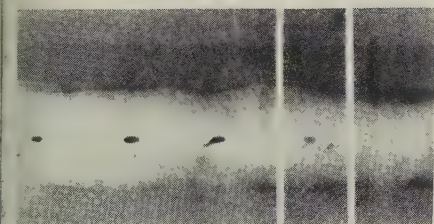
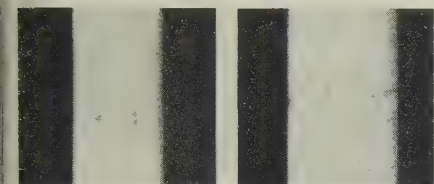
Needless inspection keeps costs high. Researchers say porosity not as serious as supposed

DO welds need to be tested as thoroughly as present codes require?

Research recently completed at Ohio State University indicates the answer is no.

Voids (porosity) equal to 7 per cent of the total cross section do not materially change tensile and impact strength or ductility, say William Green and Roy McCauley of the university's welding department.

**Test Method**—A series of tensile, bend, and impact tests was made on butt welds in 1/2-in. mild steel. Submerged arc and inert gas processes were used to obtain some porosity. All welds were machined flat from the 1/2 in. thickness of the plate.



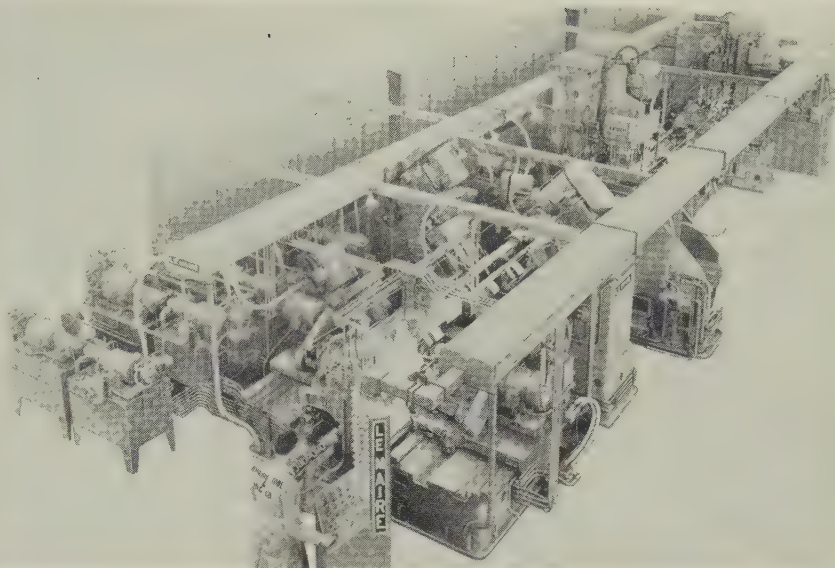
RADIOGRAPHS

... reveal porosity in specimen

Cross sections were reduced by porosity (as measured with a radiograph), but the specimens broke outside the weld at about 66,300 psi. Ductility measured 21.9 per cent elongation in 2 in.

**Practice**—Since most welds are made with some buildup, the 7 per cent figure is probably conservative, conclude engineers at Lincoln Electric Co., Cleveland. They also point out that the shape and distribution pattern of the porosity has little or no effect on the test results.

A small amount of porosity is generally acceptable under current inspection standards.



This 25-station transfer machine processes three different manifold castings. Job changeover is said to take less than 5 minutes

## Gain for Building Blocks

Builder starts five-year program to develop new lines that utilize standard components. First in the new line, a transfer machine, has standard bases for all stations

STANDARD components for special machines are still on the increase. Builders continue to weed one-shot designs out of their lines partly because of pressure for building-block designs from important customers like Ford (STEEL, Nov. 4, p. 67) and partly because standard designs cut manufacturing costs.

**Example** — Ken Martin, vice president, Le Maire Machine Tool Co., Dearborn, Mich., says his company has started a five-year program to develop new product lines based on standardized components.

The first in the series is a 25-station transfer machine that will process three different manifold castings for International Harvester. It uses standardized bases throughout.

**Work Cycle**—Output of the machine is 65 parts an hour at 100 per cent efficiency. The machine can work on two different size manifolds for a two-barrel carburetor, plus a four-barrel model.

Each station has its set of controls that can be locked out of the rest of the system. In this

case, parts will transfer past the station without being machined.

Operations include: Milling of locating surfaces, milling the manifold faces, drilling the mounting holes, milling mounting pads, drilling and reaming the automatic choke tube hole, drilling, chamfering, and tapping the carburetor mounting pad holes, drilling and tapping end holes.

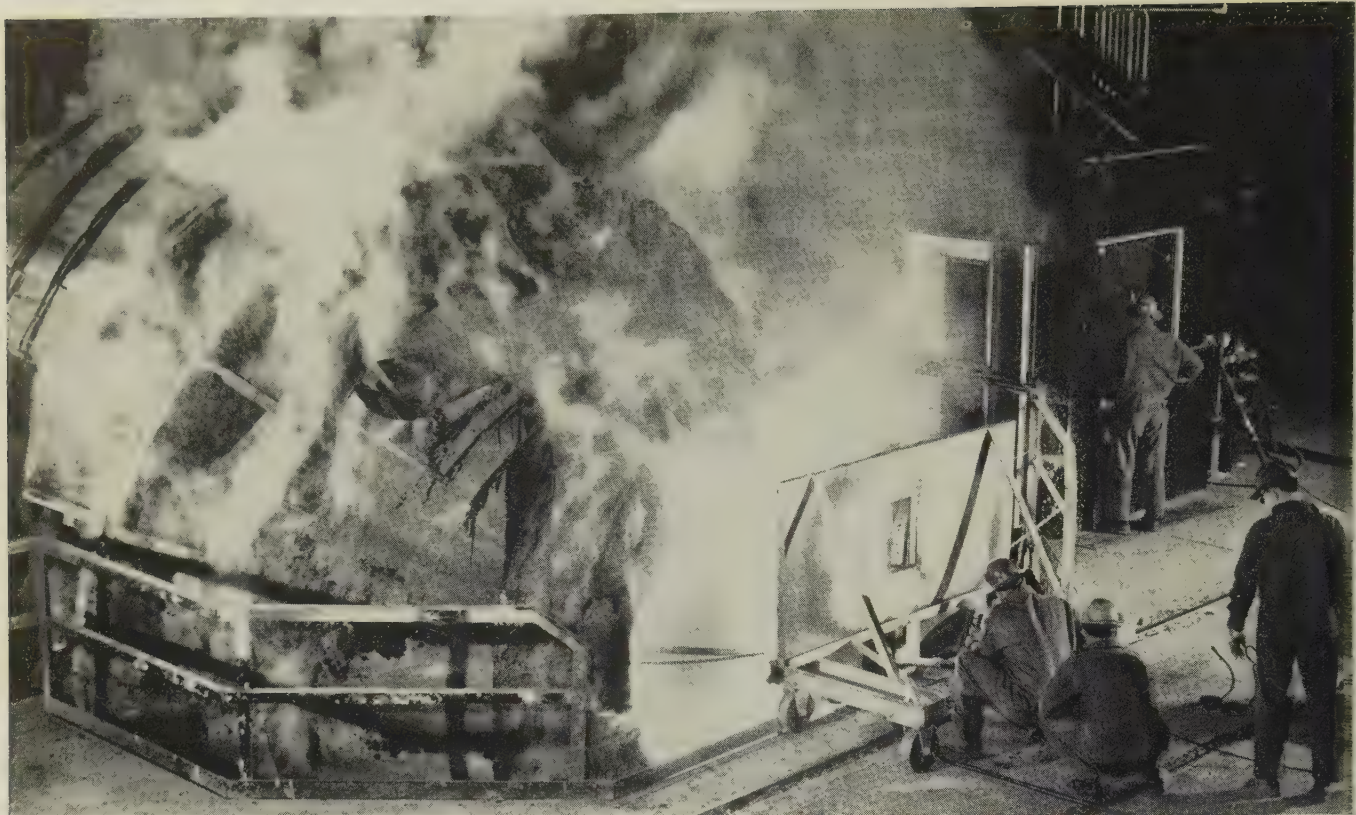
The machine has an automatic lubricating system that feeds both grease-type fixture lubricant and oil for lubricating the ways and other machine parts. There's room for two additional machine units in case they're needed.

## What's Coming?

Here's an excerpt from comments made by machining specialists for STEEL's annual Technical Forum in next week's issue.

"In 1958 I expect to see cylindrical grinding machines finish small pistons to desired size within plus or minus 10 millionths of an inch."—Henry D. Sharpe Jr., president Brown & Sharpe Mfg. Co., Providence, R. I.





Taking samples after slagging off. The furnace will be reversed for pouring

## J&L Joins Oxygen Steelmakers

Two oxygen furnaces at Aliquippa, Pa., Works will make steels low in nitrogen, phosphorus, and sulfur for pipe, tin plate, cold heading wire, welding rods, and light structurals

**START UP** of its basic oxygen steelmaking plant at Aliquippa, Pa., has given Jones & Laughlin Steel Corp. a 750,000-ton boost in annual ingot capacity at a price that will be hard to beat—\$15 an ingot ton.

The installation includes two oxygen furnaces, handling equipment for charge materials, an ingot teeming bay, and a gas cleaning system. The complete package, housed in a 275 x 228 ft building, came to about \$11 million, or a little more than one-third the cost of equivalent open hearth tonnage.

It was designed and built by

Kaiser Engineers, Oakland, Calif.

**High Up**—J&L's oxygen steelmaking plant bears the superficial resemblance to a bessemer shop that you'd expect from the similarity of processes, but the resemblance stops above the charging floor. Under the roof (180 ft up) is a lance platform where the spare oxygen lances for each vessel are stored. A few feet below, on a feeder platform, a skip hoist delivers stone, spar, and mill scale from ground level to a conveyor belt. The belt distributes the materials to hoppers.

The hoppers open onto a batching floor, where a scale car pre-

pares the stone and mill scale and delivers it to charging chutes. Also in the loft high above the furnaces are pumps for water and oxygen and heat exchangers for cooling water for the lances.

**Two Furnaces**—The vessels are cylindrical with eccentric noses and are equipped with a tap hole in the side of the nose opposite the slagging lip. Although rated at 65 tons each, they will be making 100-ton heats before long. Ladles are already being enlarged by removing a layer of brick so that they can accommodate the bigger heats. The shop is designed for a third furnace when it's needed, and foundations are in for it.

Only one furnace will operate at a time. While one is making steel, the other will be relined, a job that takes about five days. Lin-





Designers  
and Builders  
*of Complete*  
Steel Plants

THERE IS NONE BETTER



**MESTA MACHINE COMPANY**  
PITTSBURGH, PENNSYLVANIA



## PROGRESS . . .

ings should be good for 300 to 400 heats.

Production is expected to average 40 heats a day, or about 37 minutes tap to tap. The time will vary, depending on the size of heat, pressure and volume of oxygen blown, and carbon level required.

**Sequence** — The vessel, trunnioned at charging floor level, is tilted about 45 degrees to receive the charge. Scrap is brought to it on a car equipped with four charging pans, which are loaded by a magnet crane. The pans are lifted and tilted to charge the furnace by a lazy tong linkage from the car. Normal scrap charge will run 25 to 30 per cent. Only home scrap is charged.

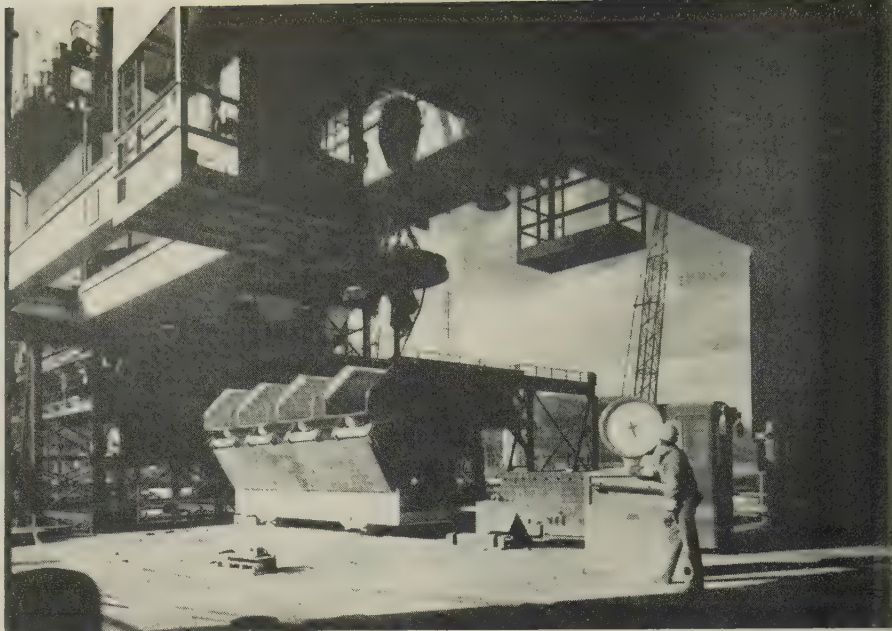
Hot metal comes into the shop in a bottle car. It is transferred to a ladle and charged by crane. When the furnace is tilted upright after charging hot metal, its throat points directly into a water-cooled hood which carries off waste gases during the blow. Chutes for charging lime and roll scale project down through this hood. After lime and scale are charged, an oxygen lance is lowered through the hood into the furnace.

**Oxygen** — A new generating plant built by Air Products Inc., Allentown, Pa., furnishes oxygen to the furnaces and for the rest of the Aliquippa Works. Oxygen is pumped through a water-cooled lance into the furnace at 3000 to 4000 cfm and 85 to 100 psi. About 100,000 cu ft are burned during a heat.

As soon as oxygen is fed to the furnace, flame and heavy brown fumes rise into the hood, hiding the lance. The blow is completed with carbon down to about 0.03 per cent when the flame thins out and the lance again comes into view.

**Fume Control**—Off gases are wetted in the hood by vertically directed water sprays and are drawn off through ducts into a wet washer. From the washer the gases pass to a Research-Cottrell electrostatic precipitator that's so efficient only a thin vapor comes off the stack during a blow.

The furnaces are slagged off over the lip by tilting in the same direction as for charging. They are tilted in the opposite direction

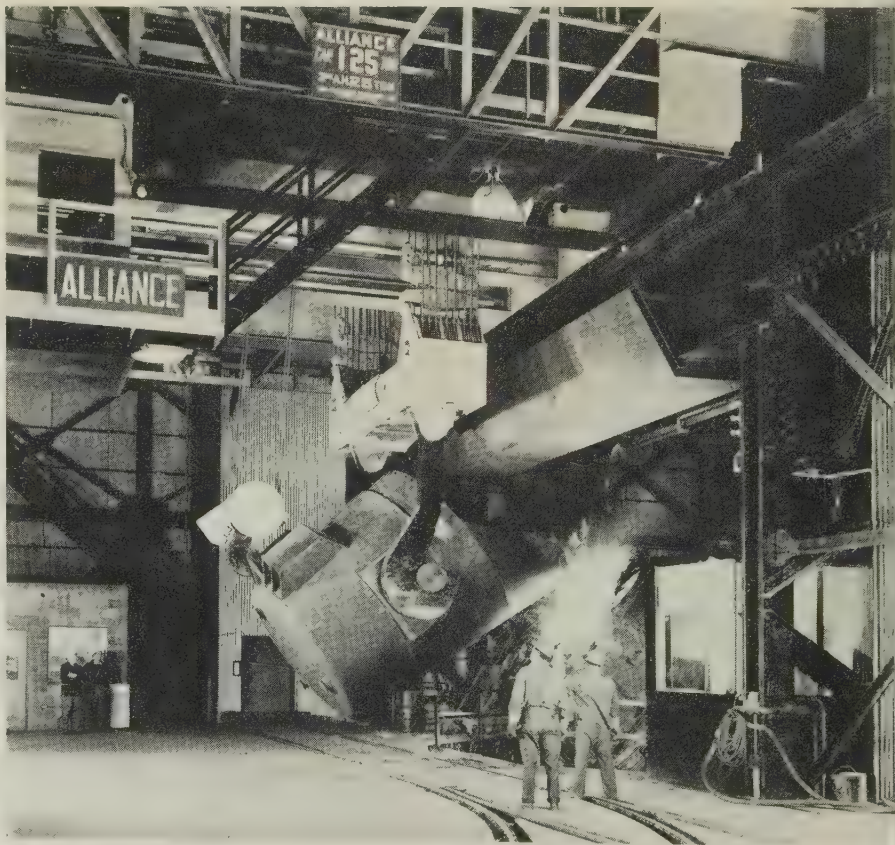


Scrap is lifted from ground level storage to the charging buggy. The oxygen furnaces are a few feet behind the scale operator

for tapping. The charging floor extends completely around the furnace, providing a place for a man to stand while punching out the tap hole. When the furnace is tilted further for pouring, he can

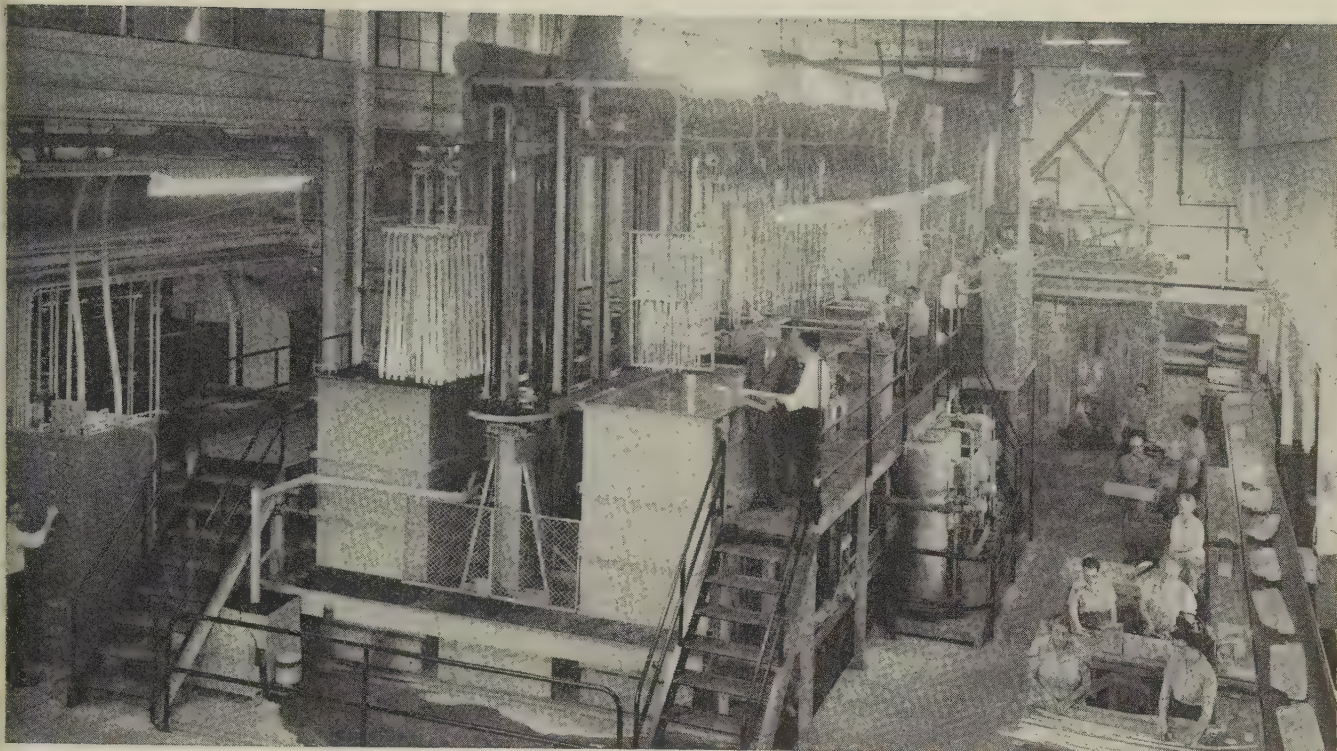
make alloy additions directly to the furnace.

Charge to ingot yield is about 88 per cent, or 92 per cent when total reclaim of pit scrap, skulls, and precipitator dust is counted.



Charging the oxygen furnace with hot metal. The tracks are for the scrap buggy. Lime and mill scale are charged by chutes from overhead





This machine completes the anodizing of a rack of parts every 2 minutes

# One Machine Anodizes Many Colors

Up to 5000 sq ft of aluminum can be treated in an hour. Automotive grilles and body trim are in production. Only one operator is needed. Unit has built-in flexibility

"A NEW and colorful era of aluminum products has started," says L. J. Campbell, president of Firestone Steel Products Co., Akron. He predicts an increasing use of anodized trim on autos and looks for anodizing to be adopted for home appliances because of the eye-appealing array of colors it offers.

**New Machine**—Grilles and body trim parts for 1958 Fords are being anodized on Firestone's new machine. It occupies 10,000 sq ft of space and can treat up to 5000 sq ft of aluminum an hour. Hanson-Van Winkle-Munning Co., Matawan, N. J., built and installed the unit. Only one operator is needed. Other workers are required to load and unload the racks.

Racks are carried through the anodizer on 52 carrier arms. There

are 19 rack-carrying hooks on the monorail adjacent to the machine where parts are loaded and unloaded. A rack is indexed to the unloading station every 2 minutes.

Tanks that hold one rack of parts are 28-in. long. All tanks are 36 in. wide and 84 in. deep. Parts longer than 84 in. can be anodized by hanging them diagonally on the rack or, if they can be bent, by looping them in the rack.

Racks are plastisol coated. The contact points are made of titanium because it resists the acid solution and doesn't anodize. If aluminum were used for contact points, it would anodize along with the work and have to be stripped of its coat after each cycle.

**High Points**—Flexibility is built into the machine. A key at the top of each rack (see illustration,

Page 66) sets off a tripper mechanism which lowers the rack into the tank for a predetermined time. If the key does not strike the tripper, that rack remains suspended while the other racks are lowered.

The shape of the key determines the operations that will be performed on the part. Keys are changed to match operations required by the parts being processed.

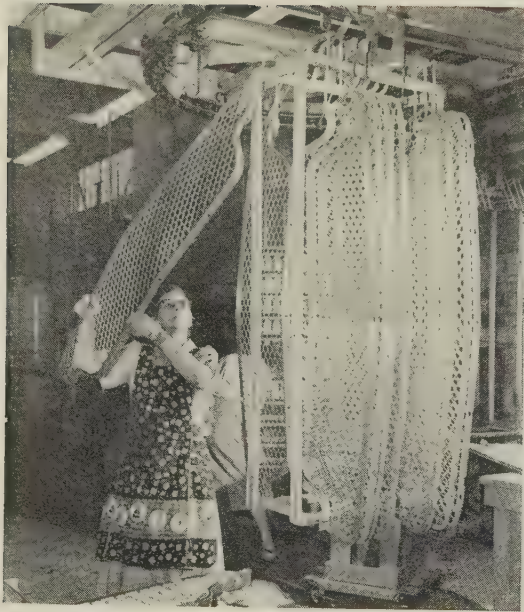
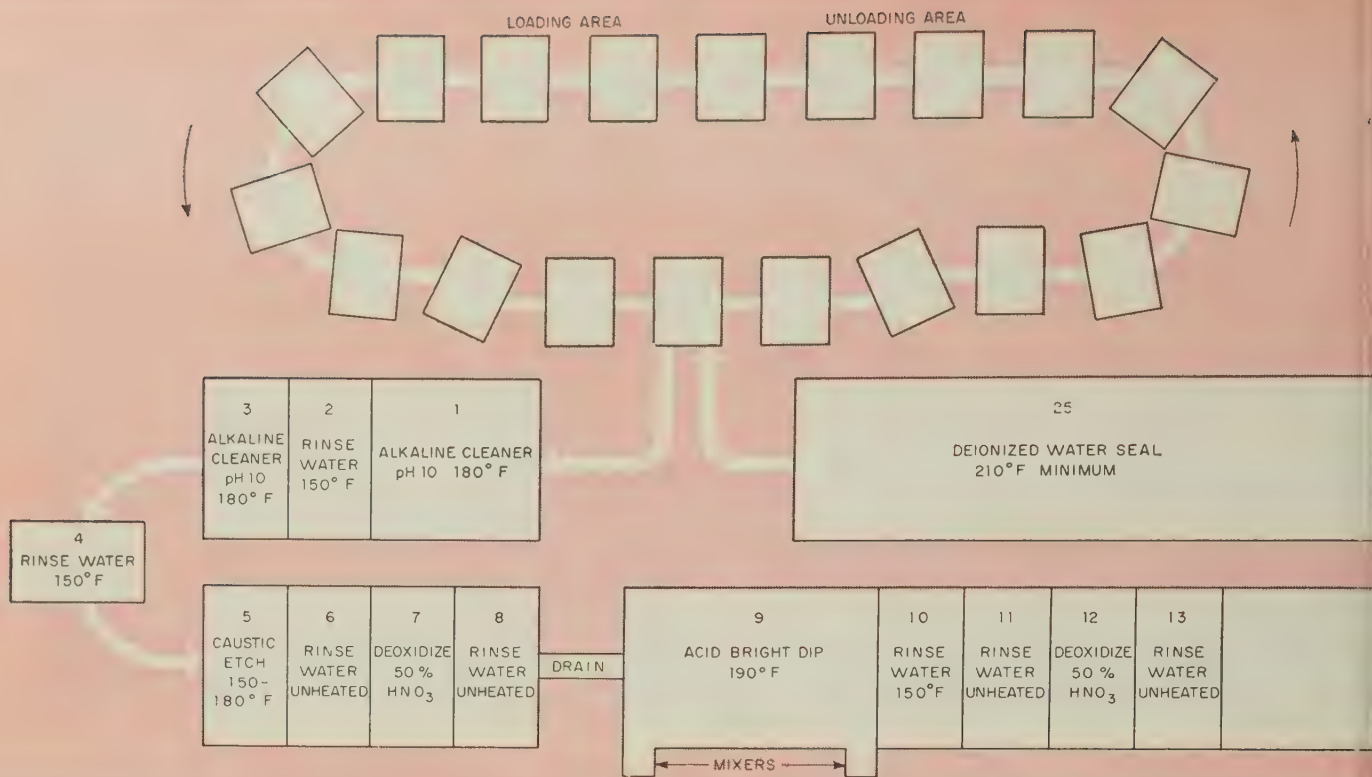
A satin finish is obtained by lowering parts into the caustic etch at station No. 5. The black smut that forms is removed in the deoxidizing tank.

The drain station before the ninth tank is required to keep water from entering the bright dip.

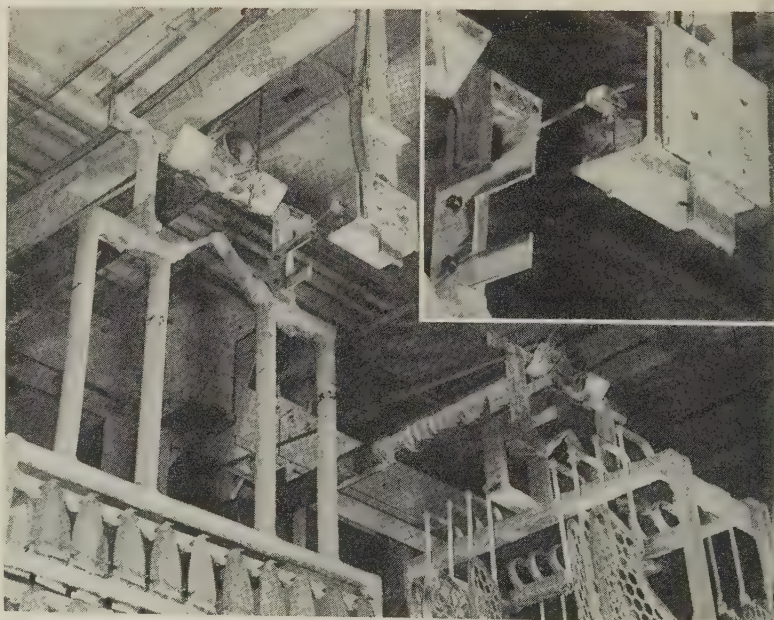
**Anodizing**—Ten racks can be accommodated at a time in the anodizing tank. The tripping mechanism is set up so that parts can be anodized for 10 or 20 minutes.

Air is used to agitate the solution in the anodizing tanks. Rectification capacity is 15,000 amperes. One hundred tons of refrigeration are required to keep





Parts to be anodized (shown are grilles for 1958 Fords) are loaded onto racks that will travel through the anodizing machine



When the key trips the solenoid, the racks are lowered into the solution. When it is desired to omit a stage, the key is shaped so that it does not strike the tripper

the temperature between 68 and 72° F. The solution is changed rapidly.

The neutralizing tank takes care of any sulfuric acid remaining after the preceding rinse. Deionized water is used in rinse tank No. 17

because ions would disturb the chemistry during the dyeing.

**More Colors**—At the inspection station, parts are at eye level when the inspector is standing on the plant floor. A lift truck can remove the entire rack of parts, take

it to another line to be treated with any one of a variety of dyes, then return the rack to complete the cycle. This procedure will be used only for experimental or job lots.

Parts to be finished in gold are immersed in tank No. 18. Product



## TANK CONSTRUCTION

Tanks 1, 2, 3, 4, 5, 6, and 21:  
1/4-in. carbon steel plates.

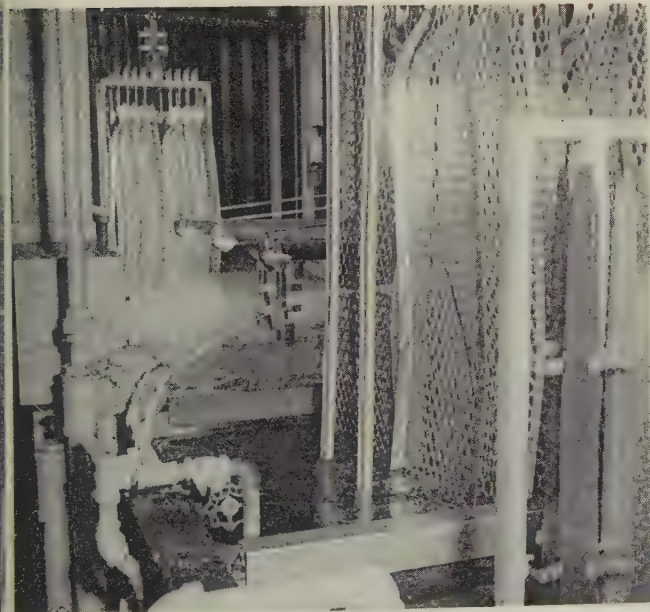
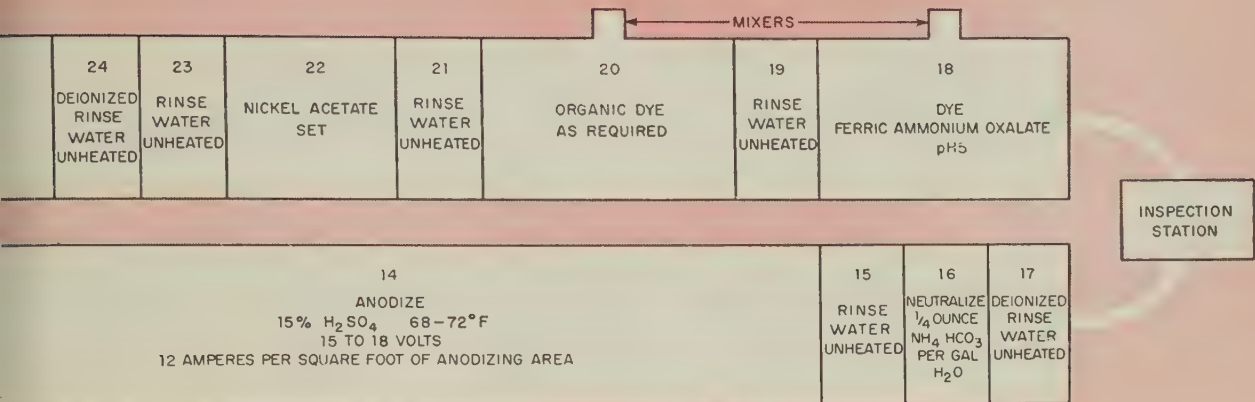
Tanks 7, 8, 11, 12, 13, 15, 16, 17, 19,  
21, 23, and 24:

1/4-in. carbon steel plates lined with  
polyvinyl chloride.

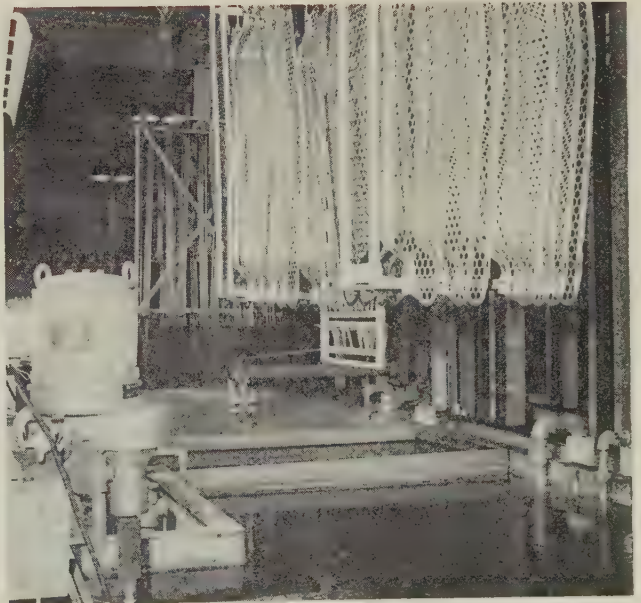
Tanks 9, 10, and 22:  
3/16-in. 316 stainless.

Tanks 18, 20, and 25:  
3/16-in. 304 stainless.

Anodizing tank 14 is made of 1/4-in. carbon steel lined with rubber; lead strips are mounted in the tank and act as a cathode.



Grilles are dipped in rinse water at 150°F after being submerged in a bright-dip solution which gives them the appearance of sterling



Mixers keep solutions in dye tanks stirred. Parts which are to have a natural aluminum finish remain suspended above the tanks; parts to be colored are immersed

tion runs of parts can be dipped in tank No. 20 when it is desired to color them with an organic dye. Parts colored with these dyes must be rinsed in nickel acetate and hot water to seal the color.

Both dye tanks are skipped when

it is desired to give the parts a natural aluminum (sterling) finish. All parts must be sealed in hot water (tank No. 25).

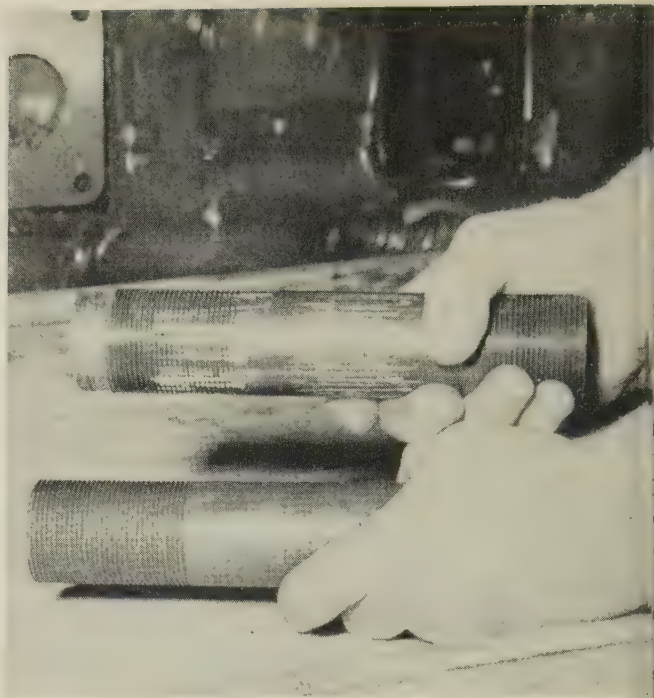
**Cost Comparison**—While some anodized parts are used where plated parts formerly appeared,

the process cannot be considered a substitute for plating. Instead, says Mr. Campbell, "It is a new method with new possibilities." It is possible to obtain decorative designs at reduced costs, but it cannot be done by direct substitution.





In the press fit assembly of pump gears and shafts, gouging and seizure occurred and shafts bent before engineers turned to molybdenum disulfide



These 1¾-in. studs were driven in track frames on the TD-24 tractor. "Moly" was used on the one the workman is holding in his left hand

## Case for Molybdenum Disulfide

By HARRY SIMON

Vice President  
Tower Oil Co.  
Chicago

Jobs that were difficult and costly have been made easy by use of the solid lubricant. Here are seven case histories of savings at International Harvester Co.

LUBRICATION engineers at International Harvester Co., Melrose Park, Ill., have learned to look to molybdenum disulfide lubricant as a possible solution when there is wear, galling, scoring, seizing, fretting, or heavy loading.

Several years ago, engineers began testing the solid lubricant in jobs where other lubricants gave less than satisfactory results. The first three applications saved \$3691.25.

**Press Fit Assemblies**—The first test came about because of difficulties in the press fit assembly of pump gears and shafts. Interference fit on the 3/8 in. diameter shafts was 0.002 in. minimum. Several liquid lubricants and premium drawing compounds were used,

but gouging and seizure occurred and many shafts bent.

"Moly" was applied to the shaft end with a cloth. In a test of 75 assemblies, all were made perfectly. (Parts had already been treated with a rustproof ferrophosphate coating which provided an ideal surface for applying the lubricant.)

Further assemblies of shafts and gears lubricated with heavy duty tapping and drawing compounds were tried. Seizure occurred in both cases; further assembly was impossible without bending the shafts. Use of "moly" in this application brought annual savings of \$1821.

**Misaligned Pins**—A second assembly problem involved pressing

1½ in. OD steel pins into line-reamed holes in a forged brake fork, with interference up to 0.003 in. Pins were frequently driven out of alignment and, if corners had not been broken, gouging off the hole occurred. Misalignment could not be corrected by rework.

When "moly" was applied to the pins, gouging and misalignment were eliminated. The annual saving was \$977.

**What "Moly" Is**—Molybdenum disulfide is a powdery material that forms a strong bond with clean metal surfaces when it is subjected to heat, pressure, or motion.

It can be applied several ways. In powder form, it is dusted on the surface and frequently buffed in. Buffing is not necessary if it is sprayed on with a propellant. It can be used as in a liquid or grease carrier, and there are processes for baking a coat on metal



surfaces. With this method, thermosetting resins and other adhering materials containing the lubricant are used.

**Stud Seizure**—In a third case at International, frequent seizure occurred in driving 1 $\frac{3}{4}$ -in. studs into track frames on the TD-24 tractor. Use of selective fits and drawing compounds did not eliminate the trouble.

As a test, dry molybdenum disulfide powder was applied after threads were phosphatized to provide a binder. Result: 28 studs chosen at random assembled without difficulty. Saving came to \$892 a year.

**Engine Block Studs**—The same process was tried in driving smaller studs ( $\frac{3}{8}$  to  $\frac{3}{4}$  in. diameter) into engine blocks in trouble spots where pitch diameter interference varied widely and torque limits were prescribed. In such cases, no conventional or premium liquid lubricants would guarantee assembly, regardless of how closely studs were selected for mating pitch diameter.

When studs were dipped in "moly," all could be driven readily except in cases where there was extreme pitch diameter interference (0.004 to 0.006 in.) A further advantage: When "moly" was used, a stud driven beyond torque limits could be withdrawn without damage to the stud or tapped hole.

**Mating Surfaces**—In assembling the sleeve and housing on the TD-24 tractor, molybdenum disulfide applied on the mating surface has proved superior to other lubricants International tried.

The lubricant also is used on the flat surfaces of conveyor tables where heavily loaded steel trays are pushed into furnaces. Wearing and scoring have been eliminated, and trays slide more easily.

Before, the tables became deeply gouged, and the heavy lubricant used collected dirt and scale, causing further abrasion. After using "moly" for three years, some of the old deep grooves are still evident, but, generally, the surfaces are healed smooth.

**Other Jobs**—On newly scraped machine tool ways, lead screws, and other mating surfaces, where extreme pressures create possibili-

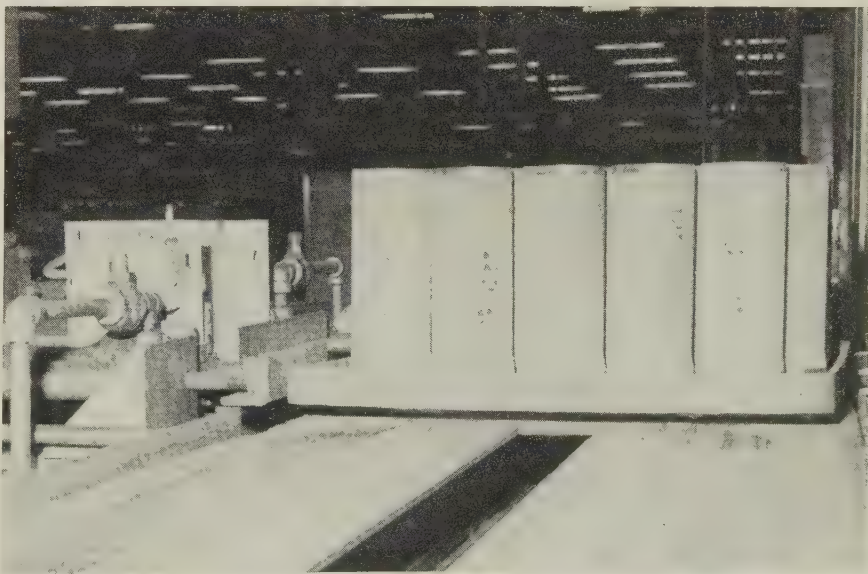


Seizure encountered in driving studs into engine blocks was caused by pitch diameter interference. "Moly" eliminated the problem except in extreme cases

ties of galling, thorough degreasing followed by application of molybdenum disulfide have eliminated pickup of abrasive particles and greatly extended the life of the parts.

In hot drawing and forming  $\frac{1}{2}$

to 1 in. steel with a large Verson press, cleaned surfaces of dies are impregnated with "moly" before use, and upper and lower die sets are further treated during operation. Rework on dies has been greatly reduced.

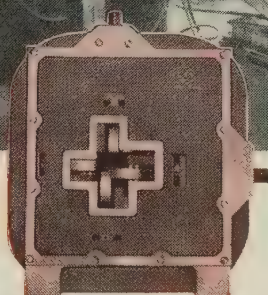
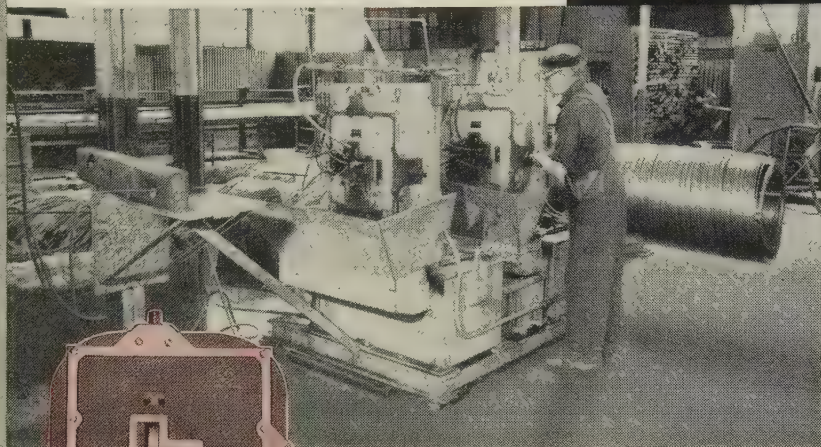
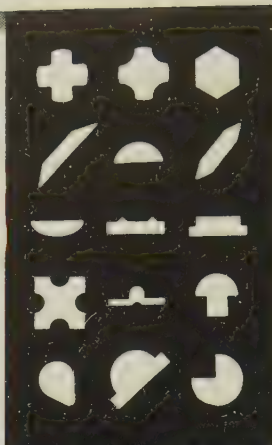


Molybdenum disulfide is used to lubricate flat surfaces of conveyor tables where heavily loaded steel trays are pushed into furnaces



# Wire Shaping

**BETTER, FASTER  
at LOWER COST**



**15,000 Pounds of Shaped Wire  
Per 8-Hour Production Run**

The Fenn 4U Universal Type Tandem Turks Head is shown in use at The National Lock Washer Company in Newark, New Jersey. Prior to being formed into lock washers and retaining rings, the wire is drawn through the tandem Turks Head for a two-step reduction which in this case results in a keystone-shaped cross section. The Shaped Wire Division of National Lock Washer, 100% equipped with Fenn Turks Heads, turns out 10,000 to 15,000 pounds of shaped wire every 8-hour production run with only three operators required to maintain this high production rate. Fenn Turks Heads may be used singly, in tandem as illustrated, or in tandem with a rolling mill or draw bench. For complete information on the capabilities, advantages and capacities of the four basic types of Fenn Turks Heads, send today for the new illustrated Turks Head Catalog No. TH56.

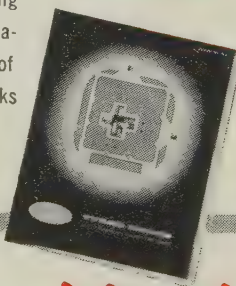
**FROM ROUND**



**TO KEYSTONE**

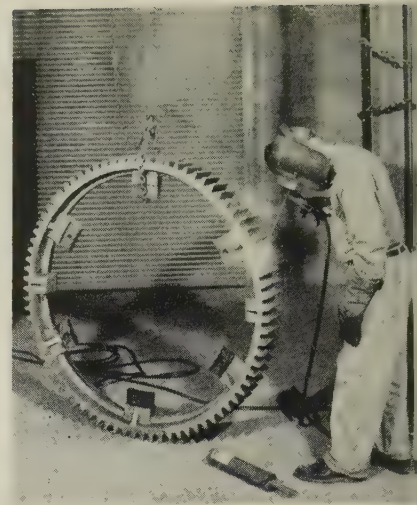


**IN A  
SINGLE PASS**



## Turks Heads

**THE FENN MANUFACTURING COMPANY** 406 FENN ROAD, NEWINGTON, CONNECTICUT



## Boosts Gear Life

**Hard facing a spur gear for ball mill makes it last 35 times as long as unprotected part**

AN IRON-BASE electrode containing chromium, molybdenum, silicon, and carbon solved a complicated problem of gear wear for a midwestern manufacturer.

**The Conditions**—The gears are used in a ball mill which processes metallic compounds that contain extremely abrasive ingredients. In the process of reducing particle size, metallic dust from the rotating mill settles on the gears.

The pinion gear resists the abrasion of the metallic dust fairly well because it is small and made of hardened steel.

The spur gears are too large to be made economically from the same material as the pinions. To keep costs down and provide the wear resistance needed for normal service, they are made of high grade cast iron. Tooth surfaces are not machined.

**A Problem**—A spur gear operated only 80 hours before it was worn out.

Hard facing the spur gear on the wearing face of each tooth was tried. After 1760 hours of operation under identical conditions, the gear showed no signs of wear. Based on this performance, it is estimated that gear life will exceed 5000 hours.

**The Solution**—Colmonoy No. 2 electrode (made by Wall Colmonoy Corp., Detroit) was used because of its abrasion resistance and low heat requirement.

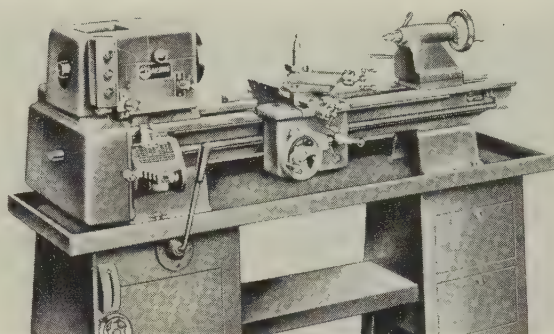


## Lathes Have Speeds of 35 to 1600 rpm

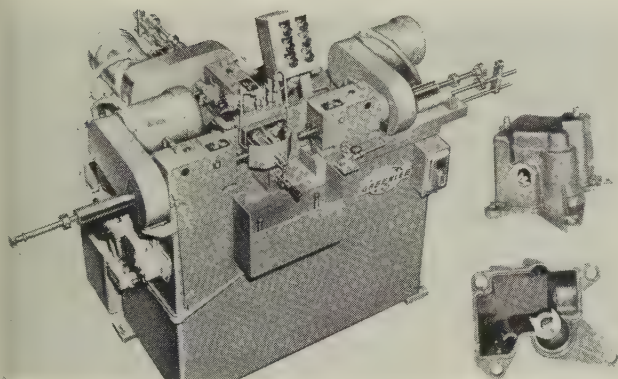
The 5400 lathes have a swing that's  $12\frac{3}{4}$  in. over the bed and  $7\frac{5}{8}$  in. over the cross slide. Center distances of the three models are 23, 35, and  $48\frac{1}{2}$  in.

The machines have 54 threads or feeds—27 are obtained by shifting two levers on the gear box, and another 27 are obtained by shifting a sliding gear.

Speeds are changed by turning a handwheel on the front of the lathe cabinet. The lathe spindle can be stopped and started without stopping the motor. Write: Clausing Div., Atlas Press Co., 26195 N. Pitcher St., Kalamazoo, Mich. Phone: Fireside 5-7157



## Borer Machines 120 Diecastings an Hour



This three-station boring machine has three standard Model S-6 Hydro-Borers mounted on a welded steel base. Two of the units are equipped with an air-operated rapid approach to advance the boring spindle to the workpiece.

Boring spindles can be retracted at any point in the machine's cycle.

Parts are manually loaded into a stationary fixture and are held in position by a quick locking device while the three holes are bored simultaneously.

Boring spindles are fed at a constant rate by using the principle of oil displacement. Write: Greenlee Bros. & Co., Rockford, Ill. Phone: 3-4881

## Press Brake Has a Die Surface of 18 Ft

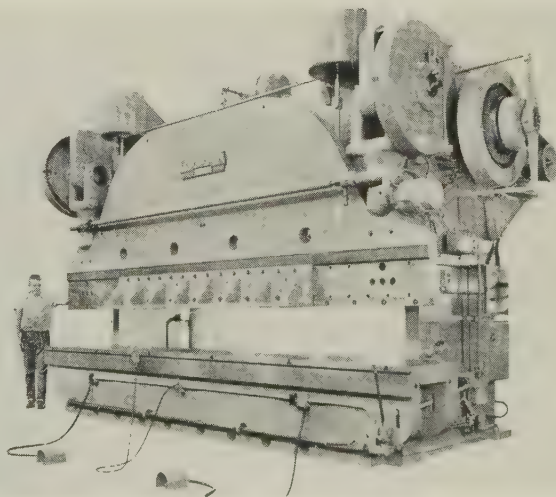
This 21 Series press brake is  $14\frac{1}{2}$  ft between housings. It has eight, 14-in. air cushions which are mounted within the special double-plate bed.

The top of the bed is covered by removable bolster plates 30 in. wide. Removable angle plates (15 in. deep) are provided on the ram for mounting heavy tooling.

The machine has a stroke of 5 in., throat clearance of 16 in., and a shut height of 18 in.

A special combination of clutch control permits a choice of manual foot-treadle operation or air-electric operation by foot switches.

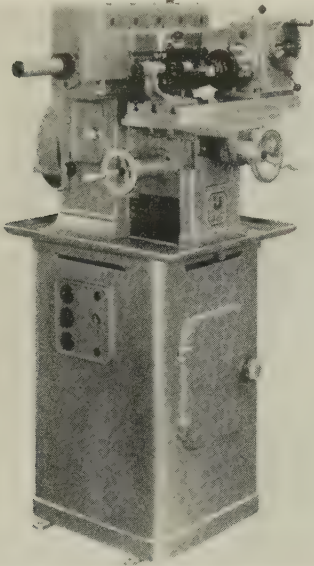
The press has a tonnage indicator, air counterbalances for the ram, and a two-speed transmission which permits operation at 7 or 30 strokes a minute. Write: Cincinnati Shaper Co., Hopple, Garrard, and Elam Streets, Cincinnati 25, Ohio. Phone: Kirby 1-5010





## Form and Punch Shaper

The K-150 makes irregular-shaped stamping and electrode punches to tolerances of  $\pm 0.00025$  in. The dividing head has an automatic circular feed which permits radiuses



and angles to be machined automatically.

All workpieces are clamped directly in a collet holder, between centers, or to the co-ordinate chuck. The co-ordinate chuck and indexing attachment guide the workpiece along the contour with one chucking, eliminating rechucking errors.

All machining operations can be checked in the shaping process with a built-in 30-power microscope. Write: Jersey Mfg. Co., 453 Livingston St., Elizabeth 1, N. J. Phone: Elizabeth 4-8222

## Template Machine

The Co-ordinator locates and drills holes in templates to within  $+0.002$  in. It is also used for producing drill jigs, simple fixtures, and other precision work in flat sheet metal or plates. Templates up to 36 x 42 in. for turret punch presses and other equipment can be made.

Holes from  $1/16$  to  $3/8$  in. in diameter can be drilled. The operator uses an X and Y chart for hole locations. Dimensions are set with two optical scanners, used with fixed scales.

Any number of holes of uniform size can be located and drilled in rapid sequence. There is no cumulative error because all dimensions are from a zero reference point to X and Y co-ordinates. Write: Wiedemann Machine Co., 725 Wissahickon Ave., Philadelphia 32, Pa. Phone: Baldwin 3-2850

## Shuttle Truck

This truck has a struck measure of 8 cu yd and a payload of 26,000 lb. It is loaded and unloaded by a flight type conveyor which extends the entire length of the body.

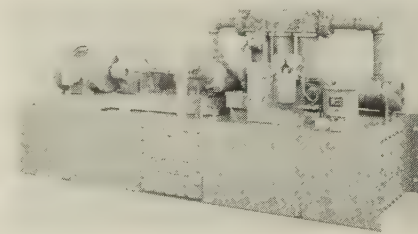
The conveyor can be operated in both directions and is accessible over 50 per cent of its length for parting. Write: Dart Truck Co., 2623 Oak St., Kansas City 8, Mo. Phone: Harrison 1-6170

## Press Lubrication

This coolant lubrication package provides a constant flow of oil to the drive of metal stamping presses.

A separate lubricating system, mounted on the same reservoir provides positive lubrication to the clutch bearings.

Gages, oil level indicators, and protective pressure switches signal when oil or water flow is interrupted. Reservoir capacity is 150

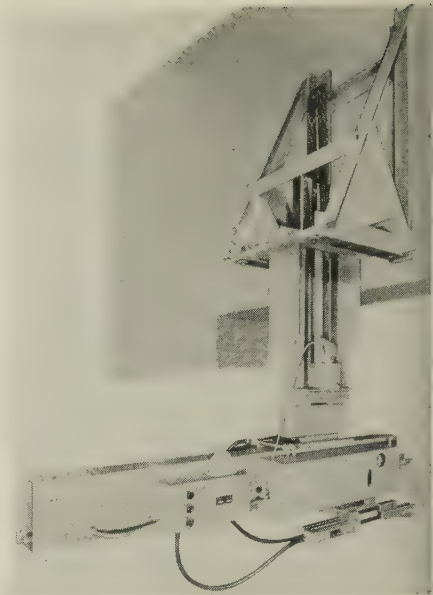


gallons; flow rate is 50 gpm.

The unit consists of a 5-hp motor, filters, and a heat exchanger with 112 sq ft of surface. Write: J. N. Fauver Co. Inc., 51 W. Hancock, Detroit 2, Mich. Phone: Temple 2-4115

## Press Unloader

Stampings are unloaded from presses in a straight line by the overhead arm unit. It consists of an overhead arm with 42 in. of vertical slide adjustment, an air-powered, straight line press unloader, and a mechanical jaw as-



sembly. The arm mounts on the crown of a press. The unloader is adjusted vertically from floor level through a lift mechanism in the overhead arm.

The unloader can be raised vertically to clear the press working area for die setting operations. It can also be swung in a horizontal plane to a position parallel to the press frame to avoid crane chain interference during die setting. Write: Press Automation Systems Inc., 25418 Ryan Rd., Centerline, Mich. Phone: Jefferson 9-7750

## Magnetic Pulley

This cobbing pulley for separating iron bearing ore has a strong, uniform magnetic strength.

Thorough removal of the iron bearing ore is assured by the pulley's strength both at the center and at the ends. Special pole construction, coil windings, and insulating materials are used. Write: Magnetic Engineering & Mfg. Co., Clifton, N. J. Phone: Prescott 7-8030

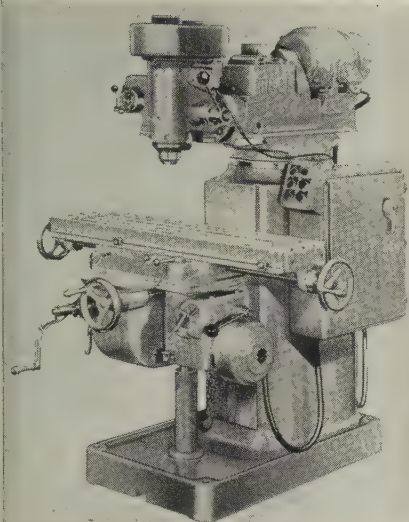
## Vertical Milling Machine

The 2VG milling machine has a quill capacity to handle cutters up to 4 in. in diameter. The quill is driven by a 3-hp motor mounted on the ram.

An automatic collet closer holds cutters in position and eliminates tool slippage. Tools up to 1 in. in diameter can be held. A roller spindle drive eliminates backlash.

Twelve speeds range from 50 to





2500 rpm. The ram is a dovetail type with an integral gearbox. The spindle can be moved to any position without the need of resetting it.

A crank selects feeds of  $\frac{3}{4}$ ,  $1\frac{3}{8}$ ,  $2\frac{3}{8}$ , 4, or 7 in. The rapid traverse speed is 70 ipm. Write: Tree Tool & Die Works, 1600 Junction Ave., Racine, Wis. Phone: Melrose 4-1881

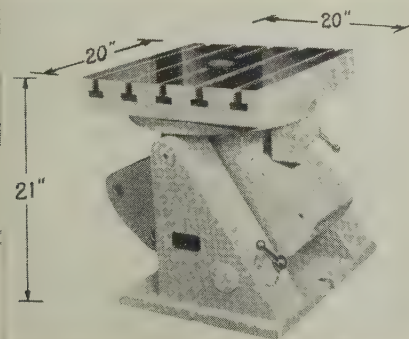
## Worktable

Angular and radial positioning of workpieces for radial drilling, tapping, and boring are provided by this unit.

The cradle-type design of the table provides 360-degree rotation and eight equally spaced radial locating holes. It permits the work to be tilted in planes from horizontal to vertical.

The table is 20 in. square and 3 in. thick. It is supported by a precision-ground pin which is mounted in two large, opposed precision bearings.

The table and cradle are accu-

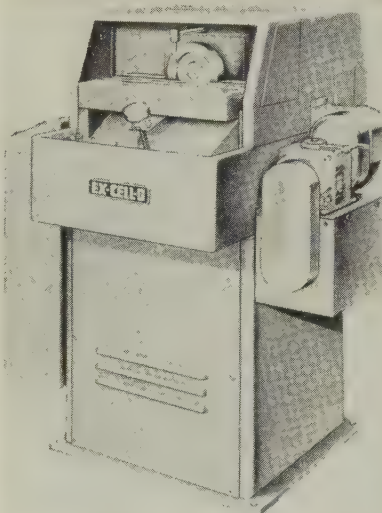


rately located in angular and radial positions by hardened steel indexing pins which are operated by a lever through rack and pinion gears. Write: Galger Engineering & Mfg. Co., 3802 S. Main St., Rockford, Ill. Phone: 5-8761

## Tool Grinder

These offhand tool grinders are of the double-end, reciprocating type. Model 142 does conventional grinding with vitrified or diamond wheels; Model 264 is equipped with metal-bonded diamond wheels for electrolytic grinding.

Both grinders do conventional grinding at one end and chip-breaker grinding at the other.



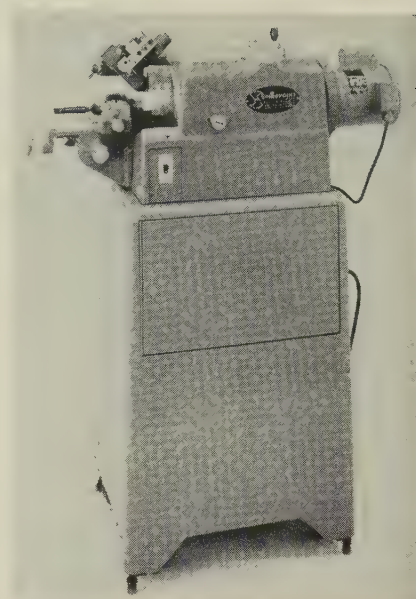
Strokes vary up to  $1\frac{1}{2}$  in. Reciprocation (power controlled) ranges from 0 to 220 strokes a minute. Write: Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich. Phone: Townsend 8-3900

## Drill Sharpener

This machine applies a spiral point to standard twist drills. Drills ground to the new design are said to last longer; produce rounder, straighter, on-size holes; eliminate center punching; require less thrust force; reduce workpiece distortion; maintain hole positioning accuracy; eliminate reaming in many cases; and yield burr-free holes in sheet metal.

The sharpener holds the drill stationary. The generating system gyrates around the drill axis to produce the desired shape.

An adjustable truing device



dresses the small tubular grinding wheel so that the point angle of the drill may be varied from about 90 to 180 degrees.

Model 500 accommodates drills from  $\frac{1}{8}$  to  $\frac{1}{2}$  in. in diameter; Model 750 handles drills from  $\frac{1}{8}$  to  $\frac{3}{4}$  in. in diameter. An attachment enables either model to grind drills from 0.040 to  $\frac{1}{8}$  in. Write: Cincinnati Lathe & Tool Co., Cincinnati 9, Ohio. Phone: Redwood 1-2121

## Barrel Plater

This automatic plater provides flexibility by using horizontal plating cylinders with a hanger-mounted motor drive.

Cylinders are attached by bolting the hanger bridge to the hanger arm of the machine. Cylinders are easily changed.

The machine has 18 cylinder stations, including five plating tank positions. A completed cylinder is turned out every 4 minutes with a 20-minute plating cycle. Write: Belke Mfg. Co., 944F N. Cicero Ave., Chicago 51, Ill. Phone: Mansfield 6-4606

## Copper Plating

CuSol is an addition agent for acid copper bath solutions which eliminates roughness, treeing, and nodular buildup. It is particularly useful for electroformed molding operations.

Because the acid base of the additive does not affect laminate boards, the material is recom-



## NEW PRODUCTS and equipment

mended for printed circuit manufacture.

The addition agent can be used up to 15 days in any normal cold or warm acid bath without replenishment. It provides a smooth and ductile fine grain deposit which does not flake or crack.

Current density ranges from 5 to 280 amperes per square foot. Seymour Mfg. Co., Seymour, Conn. Phone: Tuxedo 8-2541

## Battery Chargers

Two single-phase silicon rectifier chargers of constant voltage can be plugged into standard 15-ampere, 115-volt convenience outlets.

The smaller charger is for six-cell lead-acid batteries of up to 480 ampere-hour capacity. The larger size charges batteries up to 660 ampere-hour capacity in 16 hours or less.

The charger automatically regulates the direct current voltage output to within + 1 per cent over

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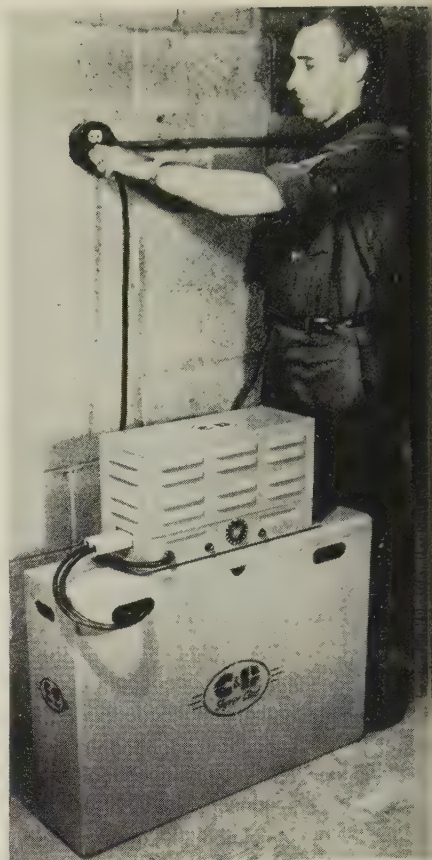
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an alternating current input voltage range of + 10 per cent.

A clock mechanism turns the charger on and cuts it off the line automatically after 16 hours or less of operation. Write: C & D Batteries Inc., Washington and Cherry Streets, Conshohocken, Pa. Phone: Taylor 8-1140

## Adhesive Bonds Metals

Plymaster V-3 is a synthetic rubber-resin film adhesive for bonding flat metal sheets, flexible plastic films to rigid and semirigid metals and plastic, and metal and plastic skins to honeycomb cores.

The film is 4 mils thick. It uses a special, high strength, porous paper as the carrier for the latent adhesive.

Four methods can be used to reactivate the dry film adhesive. They range from simple solvent reaction to heat reactivation and curing under pressure. This method gives strengths over 1000 psi accompanied by excellent peel strength.

The adhesive comes in 36-in. widths in 100-yard and larger rolls with a protective interliner. Write: Dept. P, Rubber & Asbestos Corp., 225 Belleville Ave., Bloomfield, N. J. Phone: Pilgrim 8-1300



# NEW Literature

Write directly to the company for a copy

## Copper Plating

This 3-page bulletin describes an acid copper plating process said to provide fast, smooth, and ductile deposits. Sel-Rex Corp., Nutley 10, N. J.

## Masking Tapes

Industrial uses and properties of masking tapes are described in this 6-page bulletin. Minnesota Mining & Mfg. Co., 900 Bush St., St. Paul 6, Minn.

## Heat Treating

Protected-quench furnace equipment that can be used for controlled case carburizing, carbon nitriding, carbon restoration, homogeneous carburizing, or hardening is described in a 12-page bulletin, T-620(17). Leeds & Northrup Co., 4907 Stenton Ave., Philadelphia 44, Pa.

## Crane Control

A line of front-connected direct current control panels for cranes is described in Bulletin GEA-6434A, 8 pages. General Electric Co., Schenectady 5, N. Y.

## Radial Drills

This 4-page bulletin describes four radial drills with interchangeable parts. Veet Industries, 25753 Groesbeck Highway, East Detroit, Mich.

## Steel Castings

This 6-page bulletin presents the design advantages of steel castings. Steel Founders' Society of America, 606 Terminal Tower, Cleveland 13, Ohio.

## Unitized Tooling

Perforating equipment for presses and press brakes is described in this 20-page bulletin. Punch Products Corp., Niagara Falls, N. Y.

## Filing Efficiency

Guides for determining the efficiency and costs of filing systems are described in this 28-page bulletin. Remington Rand Div., Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.

## Hand Lift Trucks

This 16-page bulletin on mechanical and hydraulic hand lift trucks tells what they are, how they operate, how to select them, and how to use them. Association of Lift Truck & Portable Elevator Manufacturers, Suite 759, 1 Gateway Center, Pittsburgh 22, Pa.

## Steel Unions

This 16-page bulletin describes the properties that make a good forged steel union. Dept. PR92, Clayton Mark & Co., 1900 Dempster St., Evanston, Ill.

## High Temperature Alloys

A wrought cobalt-base alloy used in jet engines and industrial furnaces is described in a 28-page bulletin. Another 28-page bulletin gives the properties of Hastelloy Alloy X, a nickel-base alloy available in wrought and cast form. Literature Distribution Section, Haynes Stellite Co., division of Union Carbide Corp., 30-20 Thomson Ave., Long Island City 1, N. Y.

## Advanced Materials

Technical information on materials to meet severe or unusual conditions in processing or operation, such as extreme heat, abrasive action, corrosion, or other problems, is presented in this 8-page bulletin. Research & Development Div., Carborundum Co., Niagara Falls, N. Y.

## Expanded Metal

Uses and four new types of expanded metal are described in Bulletin 20-4, 8 pages. Sizes, air flow tables, and load capacities of the grating type are listed. Joseph T. Ryerson & Son Inc., Box 8000-A, Chicago 80, Ill.



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Why? Because B-L supplies all of the three elements which must be considered—engineering, materials, erection help.

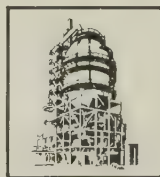
Jobs are handled by engineers who know every facet of the problem at hand—men who have had years of experience with refractories and oil refinery problems. Materials used have been proven on countless installations under the most severe of abrasive or high temperature conditions. And erection is performed by a crew of men who specialize in refinery work . . . not only in the United States, but all over the world.

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slotted tapping screws and Phillips Head Screws

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# Market Outlook

THOUGH output of steel in 1957 (estimated at 113 million net tons) will fall short of expectations, it will be our third best year—out-ranked only by the 115 million plus produced in 1956, and the record 117 million plus poured in 1955.

**SEVERAL RECORDS**—The year was not devoid of records. Pig iron production hit a new high, around 80 million tons. Finished steel consumption established a peak at around 85 million. Mill shipments to several important consuming lines, notably construction, were larger than ever before.

**MORE STATISTICS**—Scrap use totaled 66.3 million tons, off 8 per cent; pig iron consumption was 69.3 million tons, up 2.4 million; coke output was about the same as last year's 75 million tons; Lake Superior ore shipments were up about 7 million tons to 84.6 million. Other statistics: Scrap stocks were at 8.1 million tons near yearend; pig iron, 3.3 million tons; coke, 2.7 million tons; ore (all sources), 72 million tons.

**LABOR QUIET**—Except for wildcat strikes, the industry was free of serious labor trouble. Employment ranged downward from 678,000 in January to 640,000 in October. Wages went up automatically 14 cents at midyear under terms of the 1956 labor agreement. There also were a couple cost-of-living raises. Wages may follow the same course in 1958.

**PRICES HIGHER**—To offset increased wages, a general price advance averaging \$6 a ton was effected at midyear. Several other price moves (up and down) were made during the

year, including elimination of some premium quotations. STEEL's composite on finished steel rose from \$138.60 a net ton at the start of the year to \$145.42 in December.

**OUTLOOK**—With the economic readjustment continuing, prospects for first quarter steel business aren't too bright. To some extent, steel business will depend on the course of auto sales, which have been faltering lately. There are rumors of cuts in projected first quarter auto schedules.

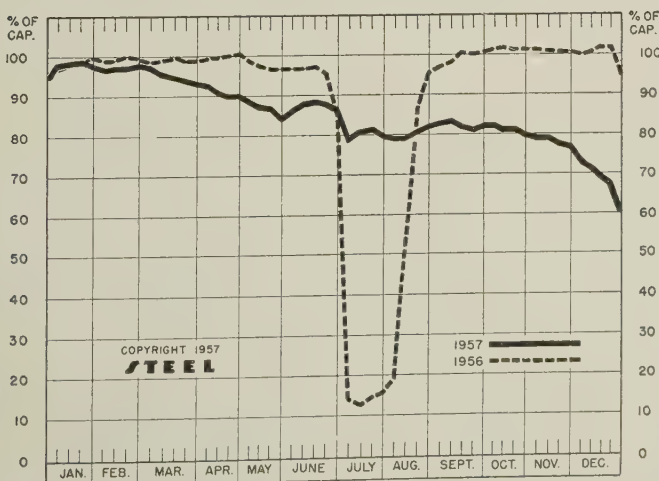
**INTAKE HEAVY**—Automotive steel intake during 1957 was surprisingly high. The industry's receipts through the first ten months amounted to 11,793,376 tons, up 450,794 tons from the 11,342,582 tons in the like period last year.

**SLOW PICKUP**—Steelmakers anticipate a little improvement following the holidays. A quickening in first quarter wire sales is already noted. But, generally, consumers are expected to stick to minimum inventories through first half. Such large consumers as the railroads, appliance makers, and implement manufacturers are not likely to increase intakes much.

**AREAS OF HOPE**—In addition to substantial first quarter automotive buying, an early rise in construction needs (particularly for highways) is being counted on. Better steel supplies may reactivate a number of projects shelved this year. It's possible an energetic missile program may get rolling soon.

**INGOT OUTPUT**—The steel rate fell to 60 per cent of capacity last week, and postholiday recovery may be slower than usual.

### NATIONAL STEELWORKS OPERATIONS



### DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended Dec. 29	Change	Same Week 1956	1955
Pittsburgh	47.5	-15*	88	96
Chicago	73.5	- 2.5*	103.5	100
Mid-Atlantic	80.5	- 0.5	99	93.5
Youngstown	35	-28	85	100
Wheeling	49	-12	92	96.5
Cleveland	51.5	-18*	90.5	97.5
Buffalo	61	- 2.5	107.5	105
Birmingham	72.5	+ 1.5	94.5	94.5
New England	50	- 2	72	92
Cincinnati	60	- 8.5	90	87.5
St. Louis	51	-24.5	64	105
Detroit	80.5	0	94.5	100
Western	77	0	103	108
National Rate	60†	- 2.5	94.5	96

### INGOT PRODUCTION†

	Week Ended Dec. 29	Week Ago	Month Ago	Year Ago
INDEX	85.5†	108.4	114.9	144.5
(1947-49=100)				
NET TONS	1,374†	1,742	1,846	2,322
(In thousands)				

\*Change from preceding week's revised rate.  
†Estimated. ‡American Iron & Steel Institute.  
Weekly capacity (net tons): 2,559,490 in 1957; 2,461,893 in 1956; 2,413,278 in 1955.





## Shipments Dip in '58

(Net tons)

	1956	1957
Sheets & Plates	702,500	634,000
Extrusions*	382,500	390,000
Electrical Conductor Cable	122,000	115,000
Foil	95,000	101,500
Rods, Bars, Wire	89,000	86,000
Forgings	38,000	34,000
Powder, Flake, Paste	14,000	15,000

\*Includes drawn tubing.  
Source: U. S. Department of Commerce and STEEL estimates.

cline in shipments are threefold: 1. Customers are working off inventories. 2. Over-all business is down in many areas. 3. The military has stretched out some defense orders. (This was partially offset this year by increased uses in other markets, such as automotive, architectural, electrical, packaging, and petroleum.)

The drop in shipments doesn't tell the full supply-demand story, however. Even with higher sales last year, capacity outstripped demand. With the new mill facilities brought in this year and those that will begin operating in 1958, capacity will remain substantially over demand for a while. Even the industry optimists concede it will probably be 1959 or 1960 before a balance can be achieved.

Here's the situation in several product categories:

**Sheets**—Individual producers report shipments off 5 to 14 per cent from 1956's. Capacity far exceeds demand. This year the mills operated at 60 to 65 per cent of capacity. This compares with an operating rate of about 90 per cent in 1956. Assuming no further reduction of inventories by customers, sheet sales in the first half of next year should be better than the third and fourth quarters of 1957. It's estimated the 1958 operating rate will be 70 to 75 per cent of capacity.

**Plates**—There has always been a large excess of plate capacity. This year, production has been at about 60 per cent of capacity. Demand was off in 1957, but producers see plates as one of the sub-

## Aluminum Growth Hits Snag

Total deliveries of mill products off about 5 per cent this year. Extrusions and foil gain over 1956. Outlook for 1958: Too much capacity, not enough demand

SHIPMENTS of aluminum mill products this year will slip about 5 per cent under the 1956 figure. The final tally should show deliveries in 1957 at 1,375,500 tons, compared with 1,443,000 tons last year.

The drop hasn't affected all products, however. A few categories, like foil and extrusions, will show slight gains (see table above).

Most of the blame for the slump can be placed on the fourth quarter. Sales in the first quarter were

good, they increased substantially in the second, then fell slightly under the first-quarter totals in the third. But the fourth quarter has turned out to be the poorest period of the year industry-wide (though one major producer says its fourth-quarter sales have shown a pickup). November was the lowest sales month in many years. This has been especially disappointing to many industry people who looked for a spurt.

**Culprits**—Reasons for the de-



stantial growth areas. Watch for a rise in shipments next year.

**Cable**—In recent years, demand has not kept pace with the industry's rapidly expanding capacity. But uses are on the increase even though shipments fell some this year. One industry spokesman sums up the cable situation this way: "Construction of electrification projects (which take large amounts of cable) are sporadic. For a while, there's a lot of business, then a slowdown. Now we are in one of the slowdown periods." In 1958, look for cable sales to stay down in the first and second quarters, followed by an upswing in the second half.

**Extrusions**—The industry's capacity greatly exceeds demand (1957 operating rate is around 60 per cent). A slight sales gain is noted this year even though shipments fell in the fourth quarter. The growth picture is bright. Producers anticipate a heavy sales rise in extrusions and cite these advantages: 1. Lightness. 2. Corrosion resistance. 3. Relatively low price. 4. Ease in fabricating and anodizing.

**Foil**—This is one of the fastest growing segments of the aluminum industry (shipments went up by 6500 tons this year). Reason: Demand is up both from the packaging industry and for household foil. Sales should keep climbing in 1958.

**Weaknesses** — Aluminum has shown a lack of muscle in forgings and tubing. Forgings were primarily affected by the drop in defense aircraft orders. Tubing probably won't see any major increases since many industries (chemical, for one) find it cheaper to use plastics for pipe and tubing.

Customer inventories have fallen steadily this year. The average inventory now is estimated to run between 30 and 45 days. Inventories should remain relatively stable in 1958.

**Future**—Supply will exceed demand for all products in 1958. Earlier this year, the prediction was for a 5 per cent increase in sales in 1958. Some still stick to that figure, but it's more than likely the industry could see a drop of 3 to 4 per cent in total shipments. Look for the second half to be better than the first.

## Tubular Goods . . .

Tubular Goods Prices, Page 85

High inventories, notably butt-weld, are slowing down distributor buying of steel pipe in the East. While there are still some tight supply spots in seamless pipe (over 12 in.), stocks generally have been rebuilt. Utilities in New England have covered their seamless requirements into the second quarter, but volume is only about one-half 1957 tonnage.

A Pittsburgh area producer of large-diameter line pipe reports this product is no longer in tight supply, due to steady improvement in availability of plates from which it is fabricated.

Orders for line pipe extend well into 1960, but shipments from the mills are on schedule, and with plate supplies increasing, a major check on production is being eliminated.

Line pipe is the only tubular product in strong demand. Oil country tubing buyers are cutting inventories sharply. Makers think users will be seeking quick deliveries in early 1958.

Producers of seamless specialties

see only a slight improvement in the dull market during the first quarter, 1958. Pressure and mechanical tubing sales are off this month from the low November levels.

El Paso Natural Gas Co. plans a \$26-million pipeline and gasoline plant in the Desert Creek area, San Juan County, Utah.

Production of 3 in. and under pipe is down in the St. Louis area. Dealers are reducing inventories. Supplies of seamless pipe have caught up with demand, and tonnage is readily available.

## Semifinished Steel . . .

Semifinished Prices, Page 81

Most steelmakers curtailed production over the holidays. In the majority of cases, producers are running finishing facilities at rates somewhat higher than ingotmaking in the last few weeks of the year. They are reducing inventories of ingots and semifinished.

Because of the outlook for early 1958, there is no need to stockpile semifinished; the steelmaking rate can be boosted in step with demand requirements.

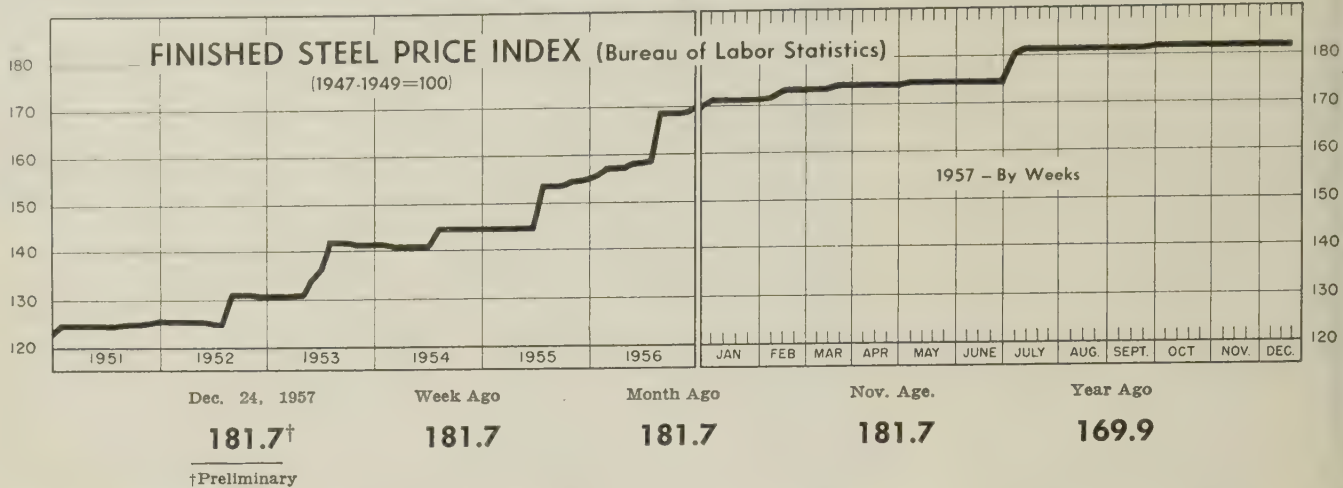
## Finished Steel Product Shipments—October, 1957

(Net tons, all grades)

Products	Carbon	Alloy	Stainless	First 10 Months	
				1957	1956
Ingots, etc. ....	18,473	12,779	4,003	410,021	595,320
Blooms, slabs, etc. ....	95,868	31,762	1,697	2,069,118	1,860,170
Tube rounds ....	683	413	.....	54,026	11,239
Skelp ....	20,300	.....	.....	141,707	153,126
Wire rods ....	74,533	2,014	505	817,918	912,370
Structurals (heavy) ....	587,717	4,115	12	5,758,220	4,313,011
Steel piling ....	49,106	.....	.....	492,317	338,023
Plates ....	720,325	41,417	2,256	8,150,346	6,332,802
Rails (standard) ....	71,607	.....	.....	1,087,183	965,280
Rails (all other) ....	6,897	.....	.....	77,394	84,995
Joint bars ....	3,034	.....	.....	74,272	70,002
Tie plates ....	5,724	.....	.....	222,184	250,892
Track spikes ....	4,297	.....	.....	68,541	82,638
Wheels ....	34,758	49	.....	324,464	288,271
Axles ....	16,972	19	.....	178,601	140,057
Bars (hot rolled) ....	486,940	125,784	3,822	6,574,834	7,233,219
Bars (reinforcing) ....	162,562	.....	.....	2,058,547	2,028,127
Bars (cold drawn) ....	87,627	17,972	4,183	1,140,096	1,468,778
Tool steel ....	755	6,680	.....	84,946	107,305
Standard pipe ....	213,561	78	.....	2,340,450	2,414,436
Oil country goods ....	193,678	33,846	.....	2,495,733	2,102,688
Line pipe ....	362,722	.....	.....	3,624,971	2,723,712
Mechanical tubing ....	40,085	18,797	322	675,931	797,695
Pressure tubing ....	20,816	4,314	1,261	353,492	313,786
Wire—drawn ....	206,021	3,044	2,198	2,238,175	2,526,279
Nails & staples ....	37,903	.....	.....	402,050	492,714
Barbed wire ....	3,037	.....	.....	54,933	68,552
Woven fence ....	10,756	.....	.....	186,009	247,940
Bale ties ....	1,301	.....	.....	45,564	46,693
Black plate ....	47,789	.....	.....	530,985	661,845
Tin plate HD ....	28,917	.....	.....	607,696	811,175
Tin plate—electro ....	293,668	.....	.....	4,205,356	4,000,764
Sheets (hot rolled) ....	622,439	26,496	1,811	6,693,443	7,159,129
Sheets (cold rolled) ....	1,134,787	3,603	8,326	9,944,292	11,001,267
Sheets—galvanized ....	212,886	.....	.....	2,042,902	2,463,683
Sheets—other coated ....	20,429	.....	.....	170,664	195,189
Elec. sheets-strip ....	5,615	43,537	.....	540,410	681,681
Strip (hot rolled) ....	116,976	2,796	1,156	1,193,564	1,487,662
Strip (cold rolled) ....	97,986	2,123	17,950	1,024,176	1,323,428
Totals (1957) ....	6,119,550	381,638	49,502	69,155,531	.....
Totals (1956) ....	7,339,911	524,116	66,930	.....	68,755,943



# Price Indexes and Composites



## AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Dec. 24

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1...	\$5.600	Bars, Reinforcing .....	6.210
Rails, Light, 40 lb .....	7.067	Bars, C.F., Carbon .....	10.360
Tie Plates .....	6.600	Bars, C.F., Alloy .....	13.875
Axles, Railway .....	9.825	Bars, C.F., Stainless, 302 (lb) .....	0.553
Wheels, Freight Car, 33 in. (per wheel) .....	60.000	Sheets, H.R., Carbon .....	6.192
Plates, Carbon .....	6.150	Sheets, C.R., Carbon .....	7.089
Structural Shapes .....	5.942	Sheets, Galvanized .....	8.220
Bars, Tool Steel, Carbon (lb) .....	0.535	Sheets, C.R., Stainless, 302 (lb) .....	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb) .....	0.650	Sheets, Electrical .....	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb) .....	1.355	Strip, C.R., Carbon .....	9.243
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb) .....	1.850	Strip, C.R., Stainless, 430 (lb) .....	0.493
Bars, H.R., Alloy .....	10.525	Strip, H.R., Carbon .....	6.245
Bars, H.R., Stainless, 303 (lb) .....	0.525	Pipe, Black, Buttweld (100 ft) .....	19.814
Bars, H.R., Carbon .....	6.425	Pipe, Galv., Buttweld (100 ft) .....	23.264
		Pipe, Line (100 ft) .....	199.023
		Casing, Oil Well, Carbon (100 ft) .....	194.499
		Casing, Oil Well, Alloy (100 ft) .....	304.610

Tubes, Boiler (100 ft) ..	49.130	Black Plate, Canmaking Quality (95 lb base box) ..	7.583
Tubing, Mechanical, Carbon (100 ft) .....	24.953	Wire, Drawn, Carbon ...	10.226
Tubing, Mechanical, Stainless, 304 (100 ft) .....	205.608	Wire, Drawn, Stainless, 430 (lb) .....	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box) .....	9.783	Bale Ties (bundles) .....	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box) ..	8.483	Nails, Wire, 8d Common, Wire, Barbed (80-rod spool) ..	9.828
		Woven Wire Fence (20-rod roll) .....	8.792
			21.737

## STEEL's FINISHED STEEL PRICE INDEX\*

	Dec. 24 1957	Week Ago	Month Ago	Year Ago	5 Yr. Ago
Index (1935-39 avg=100) ..	239.15	239.15	239.15	225.92	181.31
Index in cents per lb .....	6.479	6.479	6.479	6.111	4.972

## STEEL's ARITHMETICAL PRICE COMPOSITES\*

Finished Steel, NT .....	\$145.42	\$145.42	\$146.03	\$137.66	\$110.92
No. 2 Fdry Pig Iron, GT ..	66.49	66.49	66.49	62.63	55.04
Basic Pig Iron, GT .....	65.99	65.99	65.99	62.18	54.66
Malleable Pig Iron, GT ...	67.27	67.27	67.27	63.41	55.77
Steelmaking Scrap, GT ...	33.17	33.17	33.00	64.50	43.00

\*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

# Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

## FINISHED STEEL

	Dec. 24 1957	Week Ago	Month Ago	Year Ago	5 Yr. Ago
Bars, H.R., Pittsburgh ....	5.425	5.425	5.425	5.075	3.95
Bars, H.R., Chicago .....	5.425	5.425	5.425	5.075	3.95
Bars, H.R., deld., Philadelphia	5.725	5.725	5.725	5.35	4.502
Bars, C.F., Pittsburgh .....	7.30*	7.30*	7.30*	6.85*	4.925
Shapes, Std., Pittsburgh ...	5.275	5.275	5.275	5.00	3.85
Shapes, Std., Chicago .....	5.275	5.275	5.275	5.00	3.85
Shapes, deld., Philadelphia..	5.545	5.545	5.545	5.40	4.13
Plates, Pittsburgh .....	5.10	5.10	5.10	4.85	3.90
Plates, Chicago .....	5.10	5.10	5.10	4.85	3.90
Plates, Coatesville, Pa. ....	5.10	5.10	5.10	5.25	4.35
Plates, Sparrows Point, Md. ..	5.10	5.10	5.10	4.85	3.90
Plates, Claymont, Del. ....	5.70	5.70	5.70	5.35	4.35
Sheets, H.R., Pittsburgh ...	4.925	4.925	4.925	4.675	3.775
Sheets, H.R., Chicago .....	4.925	4.925	4.925	4.675	3.775
Sheets, C.R., Pittsburgh .....	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Chicago .....	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Detroit .....	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh ...	6.60	6.60	6.60	6.30	5.075
Strip, H.R., Pittsburgh ....	4.925	4.925	4.925	4.675	3.75-4.225
Strip, H.R., Chicago .....	4.925	4.925	4.925	4.675	3.725
Strip, C.R., Pittsburgh .....	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago .....	7.15	7.15	7.15	6.85	5.35
Strip, C.R., Detroit .....	7.25	7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh ...	7.65	7.65	7.65	7.20	5.10-5.225
Nails, Wire, Pittsburgh ....	8.95	8.95	8.95	8.20	6.20-6.35
Tin plate (1.50 lb) box, Pitts.	\$10.30	\$10.30	\$10.30	\$9.95	\$8.95

\*Including 0.35c for special quality.

## SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	\$96.00	\$96.00	\$96.00	\$91.50	\$70.50
Wire rods, 1/2"-5/8" Pitts. ...	6.15	6.15	6.15	5.80	4.425

## PIG IRON, Gross Ton

	Dec. 24 1957	Week Ago	Month Ago	Year Ago	5 Yr. Ago
Bessemer, Pitts. ....	\$67.00	\$67.00	\$67.00	\$63.50	\$55.50
Basic, Valley .....	66.00	66.00	66.00	62.50	54.50
Basic, deld., Phila. ....	70.01	70.01	70.01	66.26	59.25
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, Chicago .....	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, deld., Phila. ...	70.51	70.51	70.51	66.76	59.75
No. 2 Fdry, Birm. ....	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cln.	70.20	70.20	70.20	66.70	58.92
Malleable, Valley .....	66.50	66.50	66.50	63.00	55.00
Malleable, Chicago .....	66.50	66.50	66.50	63.00	55.00
Ferromanganese, Duquesne.	245.00†	245.00†	245.00†	235.00†	228.00*

†74-76% Mn, net ton. \*75-82% Mn, gross ton, Etina, Pa.

## SCRAP, Gross Ton (Including broker's commission)

No. - Heavy Melt, Pittsburgh	\$31.50	\$31.50	\$33.50	\$66.50	\$44.00
No. 1 Heavy Melt, E. Pa. ...	37.00	37.00	33.50	63.00	41.50
No. 1 Heavy Melt, Chicago	31.00	31.00	32.00	64.00	42.50
No. 1 Heavy Melt, Valley ..	29.50	29.50	31.50	66.50	44.00
No. 1 Heavy Melt, Cleve. ...	26.50	26.50	28.50	65.00	43.00
No. 1 Heavy Melt, Buffalo.	30.50	31.50	32.50	62.50	43.00
Rails, Rerolling, Chicago ..	49.50	49.50	48.00	89.50	52.50
No. 1 Cast, Chicago .....	38.50	37.50	35.50	50.50	50.00

## COKE, Net Ton

Beehive, Furn., Connlsvl. ...	\$15.25	\$15.25	\$15.25	\$14.50	\$14.75
Beehive, Fdry., Connlsvl. ...	18.25	18.25	18.25	17.50	17.00



# Steel Prices

Mill prices as reported to STEEL, Dec. 24, cents per pound except as otherwise noted. *Changes shown in italics.*  
Code numbers following mill points indicate producing company. Key to producers, page 82; to footnotes, page 84.

## SEMIFINISHED

<b>INGOTS, Carbon, Forging (NT)</b>	
Munhall, Pa. U5	..\$73.50
<b>INGOTS, Alloy (NT)</b>	
Detroit S41	..\$77.00
Farrell, Pa. S3	..77.00
Lowellville, O. S3	..77.00
Midland, Pa. C18	..77.00
Munhall, Pa. U5	..77.00
Sharon, Pa. S3	..77.00

## BILLETS, BLOOMS & SLABS

<b>Carbon, Rolling (NT)</b>	
Bessemer, Pa. U5	..\$77.50
Buffalo R2	..77.50
Clairton, Pa. U5	..77.50
Ensley, Ala. T2	..77.50
Fairfield, Ala. T2	..77.50
Fontana, Calif. K1	..88.00
Gary, Ind. U5	..77.50
Johnstown, Pa. B3	..77.50
Lackawanna, N.Y. B2	..77.50
Munhall, Pa. U5	..77.50
S. Chicago, Ill. R2, U5	..77.50
S. Duquesne, Pa. U5	..77.50
Sterling, Ill. N15	..77.50
Youngstown R2	..77.50

<b>Carbon, Forging (NT)</b>	
Bessemer, Pa. U5	..\$96.00
Buffalo R2	..96.00
Canton, O. R2	..98.50
Clairton, Pa. U5	..96.00
Conshohocken, Pa. A3	..101.00
Ensley, Ala. T2	..96.00
Fairfield, Ala. T2	..96.00
Fontana, Calif. K1	..105.50
Gary, Ind. U5	..96.00
Geneva, Utah C11	..96.00
Houston S5	..101.00
Johnstown, Pa. B2	..96.00
Lackawanna, N.Y. B2	..96.00
Los Angeles B3	..105.50
Midland, Pa. C18	..96.00
Munhall, Pa. U5	..96.00
Seattle B3	..109.50
Sharon, Pa. S3	..96.00
S. Chicago R2, U5, W14	..96.00
S. Duquesne, Pa. U5	..96.00
S. San Francisco B3	..105.50
Warren, O. C17	..96.00

<b>Alloy, Forging (NT)</b>	
Bethlehem, Pa. B2	..\$114.00
Bridgeport, Conn. C32	..114.00
Buffalo R2	..114.00
Canton, O. R2, T7	..114.00
Conshohocken, Pa. A3	..121.00
Detroit S41	..114.00
Economy, Pa. B14	..114.00
Farrell, Pa. S3	..114.00
Fontana, Calif. K1	..135.00
Gary, Ind. U5	..114.00
Houston S5	..119.00
Ind. Harbor, Ind. Y1	..114.00
Johnstown, Pa. B2	..114.00
Lackawanna, N.Y. B2	..114.00
Los Angeles B3	..134.00
Lowellville, O. S3	..114.00
Massillon, O. R2	..114.00
Midland, Pa. C18	..114.00
Munhall, Pa. U5	..114.00
Sharon, Pa. S3	..114.00
S. Chicago R2, U5, W14	..114.00
S. Duquesne, Pa. U5	..114.00
Struthers, O. Y1	..114.00
Warren, O. C17	..114.00

<b>ROUNDS, SEAMLESS TUBE (NT)</b>	
Buffalo R2	..\$117.50
Canton, O. R2	..120.00
Cleveland R2	..117.50
Gary, Ind. U5	..117.50
S. Chicago, Ill. R2, W14	..117.50
S. Duquesne, Pa. U5	..117.50
Warren, O. C17	..117.50

## SKELP

Alliquippa, Pa. J5	..\$5.075
Munhall, Pa. U5	..4.875
Warren, O. R2	..4.875
Youngstown R2, U5	..4.875

## WIRE RODS

Alabama City, Ala. R2	..\$6.15
Alliquippa, Pa. J5	..6.15
Alton, Ill. L1	..6.35
Buffalo W12	..6.15
Cleveland A7	..6.15
Donora, Pa. A7	..6.15
Fairfield, Ala. T2	..6.15
Houston S5	..6.40
Indiana Harbor, Ind. Y1	..6.15
Johnstown, Pa. B2	..6.15
Joliet, Ill. A7	..6.15
Kansas City, Mo. S5	..6.40
Kokomo, Ind. C16	..6.25
Los Angeles B3	..6.95
Minnequa, Colo. C10	..6.40

Monessen, Pa. P7	..\$6.15
N. Tonawanda, N.Y. B11	..6.15
Pittsburgh, Calif. C11	..6.95
Portsmouth, O. P12	..6.15
Roebing, N.J. R5	..6.25
S. Chicago, Ill. R2	..6.15
Sparrows Point, Md. B2	..6.25
Sterling, Ill. (1) N15	..6.15
Sterling, Ill. N15	..6.25
Struthers, O. Y1	..6.15
Worcester, Mass. A7	..6.45

## STRUCTURALS

### Carbon Steel Std. Shapes

Ala. City, Ala. R2	..\$5.275
Atlanta A11	..5.475
Alliquippa, Pa. J5	..5.275
Bessemer, Ala. T2	..5.275
Bethlehem, Pa. B2	..5.325
Birmingham C15	..5.275
Clairton, Pa. U5	..5.275
Fairfield, Ala. T2	..5.275
Fontana, Calif. K1	..6.075
Gary, Ind. U5	..5.275
Geneva, Utah C11	..5.275
Houston S5	..5.375
Ind. Harbor, Ind. I-2	..5.275
Johnstown, Pa. B2	..5.325
Joliet, Ill. P22	..5.275
Kansas City, Mo. S5	..5.375
Lackawanna, N.Y. B2	..5.325
Los Angeles B3	..5.975
Minnequa, Colo. C10	..5.575
Munhall, Pa. U5	..5.275
Niles, Calif. P1	..5.925
Phoenixville, Pa. P4	..5.325
Portland, Ore. O4	..6.025
Seattle B3	..6.025
S. Chicago, Ill. U5, W14	..5.275
S. San Francisco B3	..5.925
Sterling, Ill. N15	..5.275
Torrance, Calif. C11	..5.975
Weirton, W. Va. W6	..5.275

<b>Wide Flange</b>	
Bethlehem, Pa. B2	..\$5.325
Clairton, Pa. U5	..5.275
Fontana, Calif. K1	..6.225
Indiana Harbor, Ind. I-2	..5.275
Lackawanna, N.Y. B2	..5.325
Munhall, Pa. U5	..5.275
Phoenixville, Pa. P4	..5.325
S. Chicago, Ill. U5	..5.275

<b>Alloy Std. Shapes</b>	
Alliquippa, Pa. J5	..\$6.55
Clairton, Pa. U5	..6.55
Gary, Ind. U5	..6.55
Houston S5	..6.65
Kansas City, Mo. S5	..6.65
Munhall, Pa. U5	..6.55
S. Chicago, Ill. U5	..6.55

<b>H.S., L.A. Std. Shapes</b>	
Alliquippa, Pa. J5	..\$7.75
Bessemer, Ala. T2	..7.75
Bethlehem, Pa. B2	..7.80
Clairton, Pa. U5	..7.75
Fairfield, Ala. T2	..7.75
Fontana, Calif. K1	..8.55
Gary, Ind. U5	..7.75
Geneva, Utah C11	..7.75
Houston S5	..7.85
Ind. Harbor, Ind. I-2, Y1	..7.75
Johnstown, Pa. B2	..7.80
Kansas City, Mo. S5	..7.85
Lackawanna, N.Y. B2	..7.80
Los Angeles B3	..8.45
Munhall, Pa. U5	..7.75
Seattle B3	..8.50
S. Chicago, Ill. U5, W14	..7.75
S. San Francisco B3	..8.40
Struthers, O. Y1	..7.75

<b>H.S., L.A. Wide Flange</b>	
Bethlehem, Pa. B2	..\$7.80
Lackawanna, N.Y. B2	..7.80
Munhall, Pa. U5	..7.75
S. Chicago, Ill. U5	..7.75

## PILING

### BEARING PILES

Bethlehem, Pa. B2	..\$5.325
Lackawanna, N.Y. B2	..5.325
Munhall, Pa. U5	..5.275
S. Chicago, Ill. U5	..5.275

### STEEL SHEET PILING

Lackawanna, N.Y. B2	..\$6.225
Munhall, Pa. U5	..6.225
S. Chicago, Ill. U5	..6.225
Weirton, W. Va. W6	..6.225

## PLATES

### PLATES, Carbon Steel

Ala. City, Ala. R2	..\$5.10
Alliquippa, Pa. J5	..5.10
Ashland, Ky. (15) A10	..5.10
Bessemer, Ala. T2	..5.10
Clairton, Pa. U5	..5.10
Claymont, Del. C22	..5.10
Cleveland J5, R2	..5.20

Coatesville, Pa. L7	..\$5.10
Conshohocken, Pa. A3	..5.20
Ecorse, Mich. G5	..5.20
Fairfield, Ala. T2	..5.10
Fontana, Calif. (30) K1	..5.90
Gary, Ind. U5	..5.10
Geneva, Utah C11	..5.10
Granite City, Ill. G4	..5.30
Harrisburg, Pa. P4	..5.30
Houston S5	..5.20
Ind. Harbor, Ind. I-2, Y1	..5.10
Johnstown, Pa. B2	..5.10
Lackawanna, N.Y. B2	..5.10
LoneStar, Tex. E6	..5.45
Mansfield, O. B6	..5.10
Minnequa, Colo. C10	..5.95
Munhall, Pa. U5	..5.10
Newport, Ky. A2	..5.10
Pittsburgh J5	..5.10
Riverdale, Ill. A1	..5.10
Seattle B3	..6.00
Sharon, Pa. S3	..5.10
S. Chicago, Ill. U5, W14	..5.10
Sparrows Point, Md. B2	..5.10
Sterling, Ill. N15	..5.10
Steubenville, O. W10	..5.10
Warren, O. R2	..5.10
Youngstown U5, Y1	..5.10

### PLATES, Carbon Abras. Resist.

Claymont, Del. C22	..\$6.75
Fontana, Calif. K1	..7.55
Geneva, Utah C11	..6.75
Houston S5	..6.85
Johnstown, Pa. B2	..6.75
Sparrows Point, Md. B2	..6.75

### PLATES, Wrought Iron

Economy, Pa. B14	..\$13.15
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<b>PLATES, H.S., L.A.</b>	
Alliquippa, Pa. J5	..\$7.625
Bessemer, Ala. T2	..7.625
Clairton, Pa. U5	..7.625
Claymont, Del. C22	..7.625
Cleveland J5, R2	..7.625
Coatesville, Pa. L7	..7.925
Conshohocken, Pa. A3	..7.625
Economy, Pa. B14	..7.625
Ecorse, Mich. G5	..7.725
Fairfield, Ala. T2	..7.625
Farrell, Pa. S3	..7.625
Fontana, Calif. (30) K1	..8.425
Gary, Ind. U5	..7.625
Geneva, Utah C11	..7.625
Houston S5	..7.725
Ind. Harbor, Ind. I-2, Y1	..7.625
Johnstown, Pa. B2	..7.625
Munhall, Pa. U5	..7.625
Pittsburgh J5	..7.625
Seattle B3	..8.525
Sharon, Pa. S3	..7.625
S. Chicago, Ill. U5, W14	..7.625
Sparrows Point, Md. B2	..7.625
Warren, O. R2	..7.625
Youngstown U5	..7.625

### PLATES, ALLOY

Alliquippa, Pa. J5	..\$7.20
Claymont, Del. C22	..7.20
Coatesville, Pa. L7	..7.20
Economy, Pa. B14	..7.20
Farrell, Pa. S3	..7.20
Fontana, Calif. (30) K1	..8.00
Gary, Ind. U5	..7.20
Houston S5	..7.30
Ind. Harbor, Ind. Y1	..7.20
Johnstown, Pa. B2	..7.20
Lowellville, O. S3	..7.20
Munhall, Pa. U5	..7.20
Newport, Ky. A2	..7.20
Pittsburgh J5	..7.20
Seattle B3	..8.10
Sharon, Pa. S3	..7.20
S. Chicago, Ill. U5, W14	..7.20
Sparrows Point, Md. B2	..7.20
Youngstown Y1	..7.20

### FLOOR PLATES

Cleveland J5	..\$6.175
Conshohocken, Pa. A3	..6.175
Ind. Harbor, Ind. I-2	..6.175
Munhall, Pa. U5	..6.175
S. Chicago, Ill. U5	..6.175
<b>PLATES, Ingot Iron</b>	
Ashland c.l. (15) A10	..5.35
Ashland l.c.l. (15) A10	..5.85
Cleveland c.l. R2	..5.85
Warren, O. c.l. R2	..5.85

## BARS

### BARS, Hot-Rolled Carbon (Merchant Quality)

Ala. City, Ala. (9) R2	..\$5.425
Alliquippa, Pa. (9) J5	..5.425
Alton, Ill. L1	..5.625
Atlanta (9) A11	..5.625
Bessemer, Ala. (9) T2	..5.425
Birmingham (9) C15	..5.425
Buffalo (9) R2	..5.425

Clairton, Pa. (9) U5	..\$5.425
Cleveland (9) R2	..5.425
Ecorse, Mich. (9) G5	..5.525
Emeryville, Calif. J7	..6.175
Fairfield, Ala. (9) T2	..5.425
Fairless, Pa. (9) U5	..5.575
Fontana, Calif. (9) K1	..6.125
Gary, Ind. (9) U5	..5.425
Houston (9) S5	..5.675
Ind. Harbor (9) I-2, Y1	..5.425
Johnstown, Pa. (9) B2	..5.425
Joliet, Ill. P22	..5.425
Kansas City, Mo. (9) S5	..5.675
Lackawanna (9) B2	..5.425
Los Angeles (9) B3	..6.125
Milton, Pa. M18	..5.575
Minnequa, Colo. C10	..5.875
Niles, Calif. P1	..6.125
N. T. Wanda, N. Y. (23) B11	..5.775
Pittsburgh, Calif. (9) C11	..6.125
Pittsburgh (9) J5	..5.425
Portland, Ore. O4	..6.175
Seattle B3, N14	..6.175
S. Ch'cgo (9) R2, U5, W14	..5.425
S. Duquesne, Pa. (9) U5	..5.425
S. San Fran., Calif. (9) B3	..6.175
Sterling, Ill. (1) (9) N15	..5.425
Sterling, Ill. (9) N15	..5.525
Struthers, O. Y1	..5.425
Tonawanda, N.Y. B12	..5.425
Torrance, Calif. (9) C11	..6.125
Youngstown (9) R2, U5	..5.425

### BARS, H.R. Ledged Alloy (Including ledged extra)

Warren, O. C17	..\$7.475
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### BARS, Hot-Rolled Alloy

Alliquippa, Pa. J5	..\$6.475
Bethlehem, Pa. B2	..6.475
Bridgeport, Conn. C32	..6.55
Buffalo R2	..6.475
Canton, O. R2, T7	..6.475
Clairton, Pa. U5	..6.475
Detroit S41	..6.475
Economy, Pa. B14	..6.475
Ecorse, Mich. G5	..6.575
Fairless, Pa. U5	..6.625
Farrell, Pa. S3	..6.475
Fontana, Calif. K1	..7.525
Gary, Ind. U5	..6.475
Houston S5	..6.725
Ind. Harbor, Ind. I-2, Y1	..6.475
Johnstown, Pa. B2	..6.475
Kansas City, Mo. S5	..6.725
Lackawanna, N.Y. B2	..6.475
Lowellville, O. S3	..6.475
Los Angeles B3	..7.525
Massillon, O. R2	..6.475
Midland, Pa. C18	..6.475
Pittsburgh J5	..6.475
Sharon, Pa. S3	..6.475
S. Chicago R2, U5, W14	..6.475
S. Duquesne, Pa. U5	..6.475
Struthers, O. Y1	..6.475
Warren, O. C17	..6.475
Youngstown U5	..6.475

### BARS & SMALL SHAPES, H.R. High-Strength, Low



**BARS, Reinforcing  
(To Fabricators)**

Ala. City, Ala. R2	5.425
Atlanta A11	5.625
Birmingham C15, B42	5.425
Buffalo R2	5.425
Cleveland R2	5.425
Ecorse, Mich. G5	5.775
Emeryville, Calif. J7	6.175
Fairfield, Ala. T2	5.425
Fairless, Pa. U5	5.575
Fontana, Calif. K1	6.125
Ft. Worth, Tex. (4) (26) T4	5.875
Gary, Ind. U5	5.425
Houston S5	5.675
Ind. Harbor, Ind. I-2, Y1	5.425
Johnstown, Pa. B2	5.425
Joliet, Ill. P22	5.425
Kansas City, Mo. S5	5.675
Lackawanna, N.Y. B2	5.425
Los Angeles B3	6.125
Milton, Pa. M18	5.575
Minneapolis, Colo. C10	5.675
Niles, Calif. P1	5.825
Pittsburgh, Calif. C11	6.125
Pittsburgh J5	5.425
Portland, Oreg. O4	6.175
Sand Springs, Okla. S5	5.925
Seattle B3, N14	6.175
S. Chicago, Ill. R2	5.425
S. Duquesne, Pa. U5	5.425
S. San Francisco B3	6.175
Sparrows Pt., Md. B2	5.425
Sterling, Ill. (1) N15	5.425
Sterling, Ill. N15	5.525
Struthers, O. Y1	5.425
Tonawanda, N.Y. B12	6.00
Torrance, Calif. C11	6.125
Youngstown R2, U5	5.425

**BARS, Reinforcing  
(Fabricated; to Consumers)**

Boston B2	7.65
Chicago U8	6.91
Cleveland U8	6.89
Johnstown, Pa. B2	7.08
Kansas City, Mo. S5	7.35
Lackawanna, N.Y. B2	6.85
Marion, O. P11	6.70
Newark, N.J. U8	7.55
Philadelphia U8	7.38
Pittsburgh J5, U8	7.10
Seattle B3, N14	7.70
Sparrows Pt., Md. B2	7.08
St. Paul U8	7.92
Williamsport, Pa. S19	7.00

**BARS, Wrought Iron**

Economy, Pa. (S.R.) B14	14.45
Economy, Pa. (D.R.) B14	18.00
Economy, (Staybolt) B14	18.45

**RAIL STEEL BARS**

Chicago Hts. (3) C2, I-2	5.325
Chicago Hts. (4) (44) I-2	5.425
Chicago Hts. (4) C2	5.425
Franklin, Pa. (3) F5	5.325
Franklin, Pa. (4) F5	5.425
Jersey Shore, Pa. (3) J8	5.30
Marion, O. (3) P11	5.325
Tonawanda (3) R12	5.325
Tonawanda (4) B12	6.00
Williamsport, Pa. (3) S19	5.50

**SHEETS****SHEETS, Hot-Rolled Steel  
(18 Gage and Heavier)**

Ala. City, Ala. R2	4.925
Allenport, Pa. P7	4.925
Ashland, Ky. (8) A10	4.925
Cleveland J5, R2	4.925
Conshohocken, Pa. A3	4.975
Detroit (8) M1	5.025
Ecorse, Mich. G5	5.025
Fairfield, Ala. T2	4.925
Fairless, Pa. U5	4.975
Fontana, Calif. K1	5.825
Gary, Ind. U5	4.925
Geneva, Utah C11	5.025
Granite City, Ill. (8) G4	5.125
Ind. Harbor, Ind. I-2, Y1	4.925
Irvin, Pa. U5	4.925
Lackawanna, N.Y. B2	4.925
Mansfield, O. E6	4.925
Munhall, Pa. U5	4.925
Newport, Ky. (8) A2	4.925
Niles, O. M21, S3	4.925
Pittsburgh, Calif. C11	5.625
Pittsburgh J5	4.925
Portsmouth, O. P12	4.925
Riverdale, Ill. A1	4.925
Sharon, Pa. S3	4.925
S. Chicago, Ill. W14	4.925
Sparrows Pt., Md. B2	4.925
Steuensville, O. W10	4.925
Warren, O. R2	4.925
Weirton, W. Va. W6	4.925
Youngstown U5, Y1	4.925

**SHEETS, H.R., (19 Ga. & Lighter)**

Niles, O. M21	6.05
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**SHEETS, H.R. Alloy**

Gary, Ind. U5	8.10
Ind. Harbor, Ind. Y1	8.10
Irvin, Pa. U5	8.10
Munhall, Pa. U5	8.10
Newport, Ky. A2	8.10
Youngstown U5, Y1	8.10

**SHEETS, H.R. (14 Ga. & Heavier)  
High-Strength, Low-Alloy**

Cleveland J5, R2	7.275
Conshohocken, Pa. A3	7.325
Ecorse, Mich. G5	7.375
Fairfield, Ala. T2	7.275
Fairless, Pa. U5	7.325
Farrell, Pa. S3	7.275
Fontana, Calif. K1	8.175
Gary, Ind. U5	7.275
Ind. Harbor, Ind. I-2, Y1	7.275
Irvin, Pa. U5	7.275
Lackawanna (35) B2	7.275
Munhall, Pa. U5	7.275
Pittsburgh J5	7.275
S. Chicago, Ill. U5, W14	7.275
Sharon, Pa. S3	7.275
Sparrows Pt. (36) B2	7.275
Warren, O. R2	7.275
Weirton, W. Va. W6	7.275
Youngstown U5, Y1	7.275

**SHEETS, Hot-Rolled Ingot Iron  
(18 Gage and Heavier)**

Ashland, Ky. (8) A10	5.175
Cleveland R2	5.675
Warren, O. R2	5.675

**SHEETS, Cold-Rolled Ingot Iron**

Cleveland R2	6.80
Middletown, O. A10	6.55
Warren, O. R2	6.80

**SHEETS, Cold-Rolled Steel****(Commercial Quality)**

Alabama City, Ala. R2	6.05
Allenport, Pa. P7	6.05
Cleveland J5, R2	6.05
Conshohocken, Pa. A3	6.10
Detroit M1	6.05
Ecorse, Mich. G5	6.15
Fairfield, Ala. T2	6.05
Fairless, Pa. U5	6.10
Follansbee, W. Va. F4	6.05
Fontana, Calif. K1	7.30
Gary, Ind. U5	6.05
Granite City, Ill. G4	6.25
Ind. Harbor, Ind. I-2, Y1	6.05
Irvin, Pa. U5	6.05
Lackawanna, N.Y. B2	6.05
Mansfield, O. E6	6.05
Middletown, O. A10	6.05
Newport, Ky. A2	6.05
Pittsburgh, Calif. C11	7.00
Pittsburgh J5	6.05
Portsmouth, O. P12	6.05
Sparrows Pt., Md. B2	6.05
Steuensville, O. W10	6.05
Warren, O. R2	6.05
Weirton, W. Va. W6	6.05
Yorkville, O. W10	6.05
Youngstown Y1	6.05

**SHEETS, Cold-Rolled  
High-Strength, Low-Alloy**

Cleveland J5, R2	8.975
Ecorse, Mich. G5	9.075
Fairless, Pa. U5	9.025
Fontana, Calif. K1	10.275
Gary, Ind. U5	8.975
Indiana Harbor, Ind. Y1	8.975
Irvin, Pa. U5	8.975
Lackawanna (37) B2	8.975
Pittsburgh J5	8.975
Sparrows Pt. (38) B2	8.975
Warren, O. R2	8.975
Weirton, W. Va. W6	8.975
Youngstown Y1	8.975

**SHEETS, Culvert**

Cu	Cu
Steel	Fe
Ashland, Ky. A10	6.95
Canton, O. R2	6.95
Fairfield T2	6.95
Gary, Ind. U5	6.95
Granite City, Ill. G4	7.15
Ind. Harbor I-2	6.95
Irvin, Pa. U5	6.95
Kokomo, Ind. C16	7.05
Martins Ferry, W. Va. W10	6.95
Pitts., Calif. C11	7.70
Pittsburgh J5	6.95
Sparrows Pt. B2	6.95

**SHEETS, Culvert—Pure Iron**

Ind. Harbor, Ind. I-2	7.20
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**SHEETS, Galvanized Steel  
Hot-Dipped**

Ala. City, Ala. R2	6.60†
Ashland, Ky. A10	6.60†
Canton, O. R2	6.60†
Dover, O. R1	6.60†
Fairfield, Ala. T2	6.60†
Gary, Ind. U5	6.60†
Granite City, Ill. G4	6.80†
Ind. Harbor, Ind. I-2	6.60†
Irvin, Pa. U5	6.60†
Kokomo, Ind. C16	6.70†
Martins Ferry, O. W10	6.60†
Middletown, O. A10	6.60†
Pittsburgh, Calif. C11	7.35†
Pittsburgh J5	6.60†
Sparrows Pt., Md. B2	6.60†
Warren, O. R2	6.60†
Weirton, W. Va. W6	6.60†

\*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

**SHEETS, Well Casing**

Fontana, Calif. K1	7.32†
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**SHEETS, Galvanized  
High-Strength, Low-Alloy**

Irvin, Pa. U5	9.72†
Sparrows Pt. (39) B2	9.72†

**SHEETS, Galvannealed Steel**

Canton, O. R2	7.00†
Irvin, Pa. U5	7.00†

**SHEETS, Galvanized Ingot Iron  
(Hot-Dipped Continuous)**

Ashland, Ky. A10	6.85†
Middletown, O. A10	6.85†

**SHEETS, Electrogalvanized**

Cleveland (28) R2	7.425
Niles, O. (28) R2	7.425
Weirton, W. Va. W6	7.275

**SHEETS, Aluminum Coated**

Butler, Pa. A10 (type 1)	9.25
Butler, Pa. A10 (type 2)	9.35

**SHEETS, Enameling Iron**

Ashland, Ky. A10	6.60†
Cleveland R2	6.60†
Gary, Ind. U5	6.60†
Granite City, Ill. G4	6.80†
Ind. Harbor, Ind. I-2, Y1	6.60†
Irvin, Pa. U5	6.60†
Middletown, O. A10	6.60†
Niles, O. M21, S3	6.60†
Youngstown Y1	6.60†

**BLUED STOCK, 29 Gage**

Follansbee, W. Va. F4	8.65†
Ind. Harbor, Ind. I-2	8.475†
Yorkville, O. W10	8.475†

**SHEETS, Long Terne Steel  
(Commercial Quality)**

Beech Bottom, W. Va. W10	7.00
Gary, Ind. U5	7.00
Mansfield, O. E6	7.00
Middletown, O. A10	7.00
Niles, O. M21, S3	7.00
Warren, O. R2	7.00
Weirton, W. Va. W6	7.00

**SHEETS, Long Terne, Ingot Iron**

Middletown, O. A10	7.40†
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**Key to Producers**

A1 Acme Steel Co.	C20 Cuyahoga Steel & Wire	J1 Jackson Iron & Steel Co.	P1 Pacific States Steel Corp.	S25 Stainless Welded Prod.
A2 Acme-Newport Steel Co.	C22 Claymont Plant, Wick-	J3 Jessop Steel Co.	P2 Pacific Tube Co.	S26 Specialty Wire Co. Inc.
A3 Alan Wood Steel Co.	wire Spencer Steel Div.,	J4 Johnson Steel & Wire Co.	P4 Phoenix Iron & Steel Co.,	S30 Sierra Drawn Steel Corp.
A4 Allegheny Ludlum Steel	Colo. Fuel & Iron	J5 Jones & Laughlin Steel	Sub. of Barium Steel	S40 Seneca Steel Service
A5 Alloy Metal Wire Div.,	C23 Charter Wire Inc.	J6 Joslyn Mfg. & Supply	Corp.	S41 Stainless Steel Div.,
H. K. Porter Co. Inc.	C24 G. O. Carlson Inc.	J7 Judson Steel Corp.	P5 Pilgrim Drawn Steel	J&L Steel Corp.
A6 American Shm Steel Co.	C32 Carpenter Steel of N. Eng.	J8 Jersey Shore Steel Co.	P6 Pittsburgh Coke & Chem.	S42 Southern Elec. Steel Co.
A7 American Steel & Wire	D2 Detroit Steel Corp.	K1 Kaiser Steel Corp.	P7 Pittsburgh Steel Co.	T2 Tenn. Coal & Iron Div.,
Div., U. S. Steel Corp.	D3 Dearborn Div., Sharon	K2 Keokuk Electro-Metals	P11 Pollak Steel Co.	U. S. Steel Corp.
A8 Anchor Drawn Steel Co.	Steel Corp.	K3 Keystone Drawn Steel	P12 Portsmouth Div.,	T3 Tenn. Prod. & Chem.
A9 Angell Nail & Chaplet	D4 Diston Div., H. K. Por-	K4 Keystone Steel & Wire	P13 Precision Drawn Steel	T4 Texas Steel Co.
A10 Armco Steel Corp.	ter Co. Inc.	K7 Kenmore Metals Corp.	P14 Pitts. Screw & Bolt Co.	T5 Thomas Strip Div.,
A11 Atlantic Steel Co.	D6 Driver-Harris Co.	L1 Laclede Steel Co.	P15 Pittsburgh Metallurgical	Pittsburgh Steel Co.
B1 Babcock & Wilcox Co.	D7 Dickson Weatherproof	L2 LaSalle Steel Co.	P16 Page Steel & Wire Div.,	T6 Thompson Wire Co.
B2 Bethlehem Steel Co.	Nail Co.	L3 Latrobe Steel Co.	Amer. Chain & Cable	T7 Timken Roller Bearing
B3 Beth. Pac. Coast Steel	D8 Damascus Tube Co.	L6 Lone Star Steel Co.	P17 Plymouth Steel Co.	T9 Tonawanda Iron Div.,
B4 Blair Strip Steel Co.	D9 Wilbur B. Driver Co.	L7 Lukens Steel Co.	P19 Pitts. Rolling Mills	Am. Rad. & Stan. San.
B5 Bliss & Laughlin Inc.	E1 Eastern Gas & Fuel Assoc.	M1 McLouth Steel Corp.	P20 Prod. Steel Strip Corp.	T13 Tube Methods Inc.
B6 American Shm Steel Co.	E2 Eastern Stainless Steel	M4 Mahoning Valley Steel	P22 Phoenix Mfg. Co.	T19 Techalloy Co. Inc.
B7 Braeburn Alloy Steel	E4 Electro Metallurgical Co.	M6 Mercer Pipe Div., Saw-	R1 Reeves Steel & Mfg. Co.	U4 Universal-Cyclops Steel
B8 Brainerd Steel Div.,	E5 Elliott Bros. Steel Co.	hill Tubular Products	R2 Republic Steel Corp.	U5 United States Steel Corp.
Sharon Steel Corp.	E6 Empire Steel Corp.	M8 Mid-States Steel & Wire	R3 Rhode Island Steel Corp.	U6 U. S. Pipe & Foundry
B10 E. & G. Brooke, Wick-	F2 Fifth Sterling Inc.	M12 Moltrup Steel Products	R5 Roebbling's Sons, John A.	U7 Ulbrich Stainless Steels
wire Spencer Steel Div.,	F3 Fitzsimmons Steel Co.	M14 McInnes Steel Co.	R6 Rome Strip Steel Co.	U8 U. S. Steel Supply Div.,
Colo. Fuel & Iron	F4 Follansbee Steel Corp.	M16 Md. Fine & Special. Wire	R8 Reliance Div., Eaton Mfg.	U. S. Steel Corp.
B11 Buffalo Bolt Co., Div.,	F5 Franklin Steel Div.,	M17 Metal Forming Corp.	R9 Rome Mfg. Co.	V2 Vanadium-Alloys Steel
Buffalo-Eclipse Corp.	F6 Borg-Warner Corp.	M18 Milton Steel Div.,	R10 Rodney Metals Inc.	V3 Vulcan Crucible Div.,
B12 Buffalo Steel Corp.	F7 Fretz-Moon Tube Co.	Merritt-Chapman & Scott	S1 Seneca Wire & Mfg. Co.	H. K. Porter Co. Inc.
B14 A. M. Byers Co.	F8 Ft. Howard Steel & Wire	Mallory-Sharon	S3 Sharon Steel Corp.	W1 Wallace Barnes Co.
B15 J. Bishop & Co.	Ft. Wayne Metals Inc.	Titanium Corp.	S4 Sharon Tube Co.	W2 Wallingford Steel Co.
C1 Calstrip Steel Corp.	G4 Granite City Steel Co.	M22 Mill Strip Products Co.	S5 Sheffield Steel Div.,	W3 Washburn Wire Co.
C2 Calumet Steel Div.,	G5 Great Lakes Steel Corp.	N1 National Standard Co.	Armco Steel Corp.	W4 Washington Steel Corp.
Borg-Warner Corp.	G6 Greer Steel Co.	N2 National Supply Co.	S6 Shengango Furnace Co.	W6 Weirton Steel Co.
C4 Carpenter Steel Co.	G8 Green River Steel Corp.	N3 National Tube Div.,	S7 Simmons Co.	W8 Western Automatic
C7 Cleve. Cold Rolling Mills	H1 Hanna Furnace Corp.	U. S. Steel Corp.	S8 Simmonds Saw & Steel Co.	Machine Screw Co.
C9 Colonial Steel Co.	H7 Helical Tube Co.	N5 Nelson Steel & Wire Co.	S12 Spencer Wire Corp.	W9 Wheatland Tube Co.
C10 Colorado Fuel & Iron	I-1 Igoe Bros. Inc.	N6 New England High	S13 Standard Forgings Corp.	W10 Wheeling Steel Corp.
C11 Columbia-Geneva Steel	I-2 Inland Steel Co.	Carbon Wire Co.	S14 Standard Tube Co.	W12 Wickwire Spencer Steel
C12 Columbia Steel & Shaft.	I-3 Interlake Iron Corp.	N8 Newman-Crosby Steel	S15 Stanley Works	Div., Colo. Fuel & Iron
C13 Columbia Tool Steel Co.	I-4 Ingersoll Steel Div.,	N9 Newport Steel Corp.	S17 Superior Drawn Steel Co.	W13 Wilson Steel & Wire Co.
C14 Compressed Steel Shaft.	Borg-Warner Corp.	N14 Northwest Steel Roll. Mill	S18 Superior Steel Div.,	W14 Wisconsin Steel Div.,
C15 Connors Steel Div.,	I-6 Ivins, E., Steel Tube	N15 Northwestern S.&W. Co.	Copperweld Steel Co.	International Harvester
H. K. Porter Co. Inc.	I-7 Indiana Steel & Wire Co.	O4 Oregon Steel Mills	S19 Sweet's Steel Co.	W15 Woodward Iron Co.
C16 Continental Steel Corp.			S20 Southern States Steel	W18 Wyckoff Steel Co.
C17 Copperweld Steel Co.			S23 Superior Tube Co.	Y1 Youngstown Sheet & Tube
C18 Crucible Steel Co.				
C19 Cumberland Steel Co.				



## STRIP

### STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2	4.925
Alpenport, Pa. P7	4.925
Alton, Ill. L1	5.125
Ashland, Ky. (8) A10	4.925
Atlanta A11	5.125
Bessemer, Ala. T2	4.925
Birmingham C15	4.925
Buffalo (27) R2	4.925
Conshohocken, Pa. A3	4.975
Detroit M1	5.025
Ecorse, Mich. G5	5.025
Fairfield, Ala. T2	4.925
Fontana, Calif. K1	5.825
Gary, Ind. U5	4.925
Ind. Harbor, Ind. I-2, Y1	4.925
Johnstown, Pa. (25) B2	4.925
Lackawanna, N.Y. (25) B2	4.925
Los Angeles (25) B3	5.675
Minneapolis, Colo. C10	6.025
Pittsburg, Calif. C11	5.675
Riverdale, Ill. A1	4.925
San Francisco S7	6.35
Seattle (25) B3	6.35
Seattle N14	6.35
Sharon, Pa. S3	4.925
S. San Francisco (25) B3	5.675
Sparrows Point, Md. B2	4.925
Sterling, Ill. (1) N15	4.925
Sterling, Ill. N15	5.025
Torrance, Calif. C11	5.675
Warren, O. R2	4.925
Weirton, W. Va. W6	4.925
Youngstown U5	4.925

### STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18	8.10
Farrell, Pa. S3	8.10
Gary, Ind. U5	8.10
Houston S5	8.35
Ind. Harbor, Ind. Y1	8.10
Kansas City, Mo. S5	8.35
Los Angeles B3	9.30
Lowellville, O. S3	8.10
Newport, Ky. A2	8.10
Sharon, Pa. A2	8.10
S. Chicago, Ill. W14	8.10
Youngstown U5, Y1	8.10

### STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer, Ala. T2	7.325
Conshohocken, Pa. A3	7.325
Ecorse, Mich. G5	7.425
Fairfield, Ala. T2	7.325
Farrell, Pa. S3	7.325
Gary, Ind. U5	7.325
Ind. Harbor, Ind. I-2, Y1	7.325
Lackawanna, N.Y. B2	7.325
Los Angeles (25) B3	8.075
Seattle (25) B3	8.325
Sharon, Pa. S3	7.325
S. Chicago, Ill. W14	7.325
S. San Francisco (25) B3	8.075
Sparrows Point, Md. B2	7.325
Warren, O. R2	7.325
Weirton, W. Va. W6	7.325
Youngstown U5, Y1	7.325

### STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10	5.175
Warren, O. R2	5.675

### STRIP, Cold-Rolled Carbon

Anderson, Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Conshohocken, Pa. A3	7.20
Dearborn, Mich. D3	7.25
Detroit D2, M1, P20	7.25
Dover, O. G6	7.15
Ecorse, Mich. G5	7.25
Evansville, Ind. M22	7.25
Follansbee, W. Va. F4	7.15
Fontana, Calif. K1	9.00
Franklin Park, Ill. T6	7.25
Ind. Harbor, Ind. Y1	7.15
Indianapolis J5	7.30
Los Angeles C1	9.05
Los Angeles J5	9.20
New Bedford, Mass. R10	7.60
New Britain (10) S15	7.15
New Castle, Pa. B4, E5	7.15
New Haven, Conn. D2	7.60
New Kensington, Pa. A6	7.15
Pawtucket, R.I. R3	7.80
Pawtucket, R.I. N8	7.70
Philadelphia (45) P24	7.70
Pittsburg J5	7.15
Riverdale, Ill. A1	7.25
Rome, N.Y. (32) R6	7.15
Sharon, Pa. S3	7.15
Trenton, N.J. (31) R5	8.60
Wallingford, Conn. W2	7.60
Warren, O. R2, T5	7.15
Weirton, W. Va. W6	7.15
Worcester, Mass. A7	7.70
Youngstown J5, Y1	7.15

### STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie, Pa. S18	15.05
Cleveland A7	15.05
Dover, O. G6	15.05
Farrell, Pa. S3	15.05
Franklin Park, Ill. T6	15.05
Harrison, N.J. C18	15.05
Indianapolis J5	15.20
Lowellville, O. S3	15.05
Pawtucket, R.I. N8	15.40
Riverdale, Ill. A1	15.05
Sharon, Pa. S3	15.05
Worcester, Mass. A7	15.35
Youngstown J5	15.05

### STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn, Mich. D3	10.60
Dover, O. G6	10.45
Ecorse, Mich. G5	10.55
Farrell, Pa. S3	10.50
Ind. Harbor, Ind. Y1	10.65
Sharon, Pa. S3	10.50
Warren, O. R2	10.45

### STRIP, Cold-Finished Spring Steel (Annealed)

Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	9.50	10.70	12.90	15.90	18.85
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	18.55
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. D3	9.05	10.50	12.70	15.70	18.55
Detroit D2	9.05	10.50	12.70	15.70	18.55
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evansville, Ind. M22	8.95	10.40	12.60	15.60	18.55
Fostoria, O. S1	10.05	11.15	13.10	16.10	18.55
Franklin Park, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison, N.J. C18	9.10	10.55	12.60	15.60	18.55
Indianapolis J5	11.15	12.60	14.80	17.80	18.55
Los Angeles C1	11.15	12.60	14.80	17.80	18.55
New Britain, Conn. (10) S15	8.95	10.40	12.60	15.60	18.55
New Castle, Pa. B4, E5	8.95	10.40	12.60	15.60	18.55
New Haven, Conn. D2	9.40	10.70	12.90	15.90	18.55
New Kensington, Pa. A6	8.95	10.40	12.60	15.60	18.55
New York W3	9.50	10.70	12.90	15.90	18.55
Pawtucket, R.I. N8	9.05	10.40	12.60	15.60	18.55
Riverdale, Ill. A1	8.95	10.40	12.60	15.60	18.55
Rome, N.Y. (32) R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	9.50	10.70	12.90	15.90	18.55
Trenton, N.J. R5	9.40	10.70	12.90	15.90	18.55
Wallingford, Conn. W2	8.95	10.40	12.60	15.60	18.55
Warren, O. T5	8.95	10.40	12.60	15.60	18.55
Worcester, Mass. A7, T6	9.50	10.70	12.90	15.90	18.55
Youngstown J5	8.95	10.40	12.60	15.60	18.55

### Spring Steel (Tempered)

Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.30
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Palmer, Mass. W12	18.10	21.95	26.30
Trenton, N.J. R5	18.10	21.95	26.30
Worcester, Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

## SILICON STEEL

### H.R. SHEETS (22 Ga., cut lengths)

	Field	Arma- ture	Elec- tric	Motor	Dyna- mo
Beech Bottom, W. Va. W10	11.80	11.80	12.90	13.95	13.95
Mansfield, O. E6	9.625	11.10	11.80	12.90	13.95
Newport, Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles, O. M21, S3	9.625	11.10	11.80	12.90	13.95
Vandergrift, Pa. U5	11.10	11.80	12.90	13.95	13.95
Warren, O. R2	9.625	11.10	11.80	12.90	13.95
Zanesville, O. A10	11.10	11.80	12.90	13.95	13.95
Zanesville, O. A10 (SP Colls)	11.10	11.80	12.90	13.95	13.95

### C.R. COILS & CUT LENGTHS (22 Ga.)

	Field	Arma- ture	Elec- tric	Motor	Dyna- mo
(Semiprocessed 1/2 c lower)					
Beech Bottom, W. Va. W10	11.35	12.05	13.15	14.20	14.20
Brackenridge, Pa. A4	9.825	11.05	11.75	12.85	14.20
Granite City, Ill. G4	9.625	10.85	11.55	12.65	14.20
Indiana Harbor, Ind. I-2	9.625	11.35	12.05	13.15	14.20
Mansfield, O. E6	9.625	11.35	12.05	13.15	14.20
Vandergrift, Pa. U5	9.625	11.35	12.05	13.15	14.20
Warren, O. R2	9.625	11.35	12.05	13.15	14.20
Zanesville, O. A10 (FP Colls)	11.35	12.05	13.15	14.20	14.20

### H.R. SHEETS (22 Ga., cut lengths)

	T-72	T-65	T-58	T-52
Beech Bottom, W. Va. W10	15.00	15.55	16.05	17.10
Vandergrift, Pa. U5	14.75	15.55	16.05	17.10
Zanesville, O. A10	15.00	15.55	16.05	17.10

### C.R. COILS & CUT LENGTHS (22 Ga.)

	T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge, Pa. A4	17.60	19.20	19.70	20.20	20.20	20.20
Butler, Pa. A10	19.20	19.70	20.20	20.20	20.20	20.20
Vandergrift, Pa. U5	16.60	17.60	19.20	19.70	20.20	20.20
Warren, O. R2	19.20	19.70	20.20	20.20	20.20	20.20

\*Semiprocessed. †Fully processed only. ‡Colls, annealed, semiprocessed 1/2 c lower. \*\*Cut lengths, 1/4-cent lower.

### Weirton, W. Va. W6

Youngstown Y1 10.65

### STRIP, Cold-Rolled Ingot Iron

Warren, O. R2 7.90

### STRIP, C.R. Electroalvanized

Cleveland A7	7.15
Dover, O. G6	7.15
Evansville, Ind. M22	7.25
Riverdale, Ill. A1	7.25
Warren, O. B9, T5	7.15
Worcester, Mass. A7	7.70
Youngstown J5	7.15

\*Plus galvanizing extras.

### STRIP, Galvanized (Continuous)

Sharon, Pa. S3 7.275

### TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale, Ill. A1	5.50
Sharon, Pa. S3	5.35
Youngstown U5	5.35

## TIN MILL PRODUCTS

### TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Alliquippa, Pa. J5	\$8.75	\$9.00	\$9.40
Fairfield, Ala. T2	8.85	9.10	9.50
Fairless, Pa. U5	8.85	9.10	9.50
Fontana, Calif. K1	9.50	9.75	10.15
Gary, Ind. U5	8.75	9.00	9.40
Granite City, Ill. G4	8.85	9.10	9.50
Indiana Harbor, Ind. I-2, Y1	8.75	9.00	9.40
Irvin, Pa. U5	8.75	9.00	9.40
Niles, O. R2	8.75	9.00	9.40
Pittsburg, Calif. C11	9.50	9.75	10.15
Sparrows Point, Md. B2	8.85	9.10	9.50
Weirton, W. Va. W6	8.75	9.00	9.40
Yorkville, O. W10	8.75	9.00	9.40

### ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Alliquippa, Pa. J5	7.725	7.925	8.125
Niles, O. R2	7.725	7.925	8.125

### TIN PLATE, American 1.25 lb

	lb	lb
Alliquippa, Pa. J5	\$10.05	\$10.30
Fairfield, Ala. T2	10.15	10.40
Fairless, Pa. U5	10.15	10.40
Fontana, Calif. K1	10.80	11.05
Gary, Ind. U5	10.05	10.30
Irvin, Pa. U5	10.05	10.30
Pitts., Calif. C11	10.80	11.05
Sp. Pt., Md. B2	10.15	10.40
Weirton, W. Va. W6	10.05	10.30
Yorkville, O. W10	10.05	10.30

### BLACK PLATE (Base Box)

Alliquippa, Pa. J5	\$7.85
Fairfield, Ala. T2	7.95
Fairless, Pa. U5	7.95
Fontana, Calif. K1	8.60
Gary, Ind. U5	7.85
Granite City, Ill. G4	7.95
Ind. Harbor, Ind. I-2, Y1	7.85
Irvin, Pa. U5	7.85

## WIRE

### WIRE, Manufacturers Bright, Low Carbon

Alabama City, Ala. R2	7.65
Alliquippa, Pa. J5	7.65
Alton, Ill. L1	7.85
Atlanta A11	7.85
Bartonsville, Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville, Ind. M8	7.75
Donora, Pa. A7	7.65
Duluth A7	7.65
Fairfield, Ala. T2	7.65
Fostoria, O. (24) S1	7.75
Houston S5	7.90
Jacksonville, Fla. M8	8.00
Johnstown, Pa. B2	7.65
Joliet, Ill. A7	7.65
Kansas City, Mo. S5	7.90
Kokomo, Ind. C16	7.75
Los Angeles B3	8.60
Minnequa, Colo. C10	7.90
Monessen, Pa. P7, P16	7.65
N. Tonawanda, N.Y. B11	7.65
Palmer, Mass. W12	7.95
Pittsburg, Calif. C11	8.60
Portsmouth, O. P12	7.65
Rankin, Pa. A7	7.65
S. Chicago, Ill. R2	7.65
S. San Francisco C10	8.60
Sparrows Point, Md. B2	7.75
Sterling, Ill. (1) N15	7.65
Sterling, Ill. N15	7.75
Struthers, O. Y1	7.65
Waukegan, Ill. A7	7.65
Worcester, Mass. A7	7.95

### WIRE, Gal'd ACSR for Cores

Bartonsville, Ill. K4	12.65
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**WIRE, Tire Bead**  
 Bartonville, Ill. K4 .....16.55  
 Monessen, Pa. P16 .....16.55  
 Roebbing, N.J. R5 .....17.05

**WIRE, Cold-Rolled Flat**  
 Anderson, Ind. G6 .....11.65  
 Baltimore T6 .....11.95  
 Boston T6 .....11.95  
 Buffalo W12 .....11.65  
 Chicago W13 .....11.75  
 Cleveland A7 .....11.65  
 Crawfordville, Ind. M8 .....11.65  
 Dover, O. G6 .....11.65  
 Fostoria, O. S1 .....11.65  
 Franklin Park, Ill. T6 .....11.75  
 Kokomo, Ind. C16 .....11.65  
 Massillon, O. R8 .....11.65  
 Milwaukee C23 .....11.85  
 Monessen, Pa. P7, P16 .....11.65  
 Palmer, Mass. W12 .....11.95  
 Pawtucket, R.I. N8 .....11.95  
 Philadelphia P21 .....11.95  
 Riverdale, Ill. A1 .....11.75  
 Rome, N.Y. R6 .....11.65  
 Sharon, Pa. S3 .....11.65  
 Trenton, N.J. R5 .....11.95  
 Warren, O. B9 .....11.65  
 Worcester, Mass. A7, T6 .....11.95

**NAILS, Stock**  
 Alabama City, Ala. R2 .....173  
 Aliquippa, Pa. J5 .....173  
 Atlanta A11 .....175  
 Bartonville, Ill. K4 .....175  
 Chicago W13 .....173  
 Cleveland A9 .....173  
 Crawfordville, Ind. M8 .....175  
 Donora, Pa. A7 .....173  
 Duluth A7 .....173  
 Fairfield, Ala. T2 .....173  
 Houston S5 .....178  
 Jacksonville, Fla. (20) M8 .....184  
 Johnstown, Pa. B2 .....173  
 Joliet, Ill. A7 .....173  
 Kansas City, Mo. S5 .....178  
 Kokomo, Ind. C16 .....175  
 Minneapolis, Colo. C10 .....178  
 Monessen, Pa. P7 .....173  
 Pittsburgh, Calif. C11 .....192  
 Rankin, Pa. A7 .....173  
 S. Chicago, Ill. R2 .....173  
 Sparrows Pt., Md. B2 .....175  
 Sterling, Ill. (7) N15 .....175  
 Worcester, Mass. A7 .....179

(To Wholesalers; per cwt)  
 Galveston, Tex. D7 .....\$9.10

**NAILS, Cut (100 lb keg)**  
 To Dealers (33)  
 Conshohocken, Pa. A3 .....\$9.80  
 Wheeling, W. Va. W10 .....\$9.80

**POLISHED STAPLES**  
 Alabama City, Ala. R2 .....175  
 Aliquippa, Pa. J5 .....175  
 Atlanta A11 .....177  
 Bartonville, Ill. K4 .....177  
 Crawfordville, Ind. M8 .....177  
 Donora, Pa. A7 .....175  
 Duluth A7 .....175  
 Fairfield, Ala. T2 .....175  
 Jacksonville, Fla. (20) M8 .....186  
 Johnstown, Pa. B2 .....175  
 Joliet, Ill. A7 .....175  
 Kokomo, Ind. C6 .....177  
 Minneapolis, Colo. C10 .....180  
 Pittsburgh, Calif. C11 .....194  
 Rankin, Pa. A7 .....175  
 S. Chicago, Ill. R2 .....175  
 Sparrows Pt., Md. B2 .....177  
 Sterling, Ill. (7) N15 .....175  
 Worcester, Mass. A7 .....181

**TIE WIRE, Automatic Baler**  
 (14 1/2 Ga./Per 97 lb Net Box)  
 Coil No. 3150

Alabama City, Ala. R2 .....\$10.26  
 Atlanta A11 .....10.36  
 Bartonville, Ill. K4 .....10.36  
 Buffalo W12 .....10.26  
 Chicago W13 .....10.26  
 Crawfordville, Ind. M8 .....10.36  
 Donora, Pa. A7 .....10.26  
 Duluth A7 .....10.26  
 Fairfield, Ala. T2 .....10.26  
 Houston S5 .....10.26  
 Jacksonville, Fla. M8 .....10.51  
 Johnstown, Pa. B2 .....10.26  
 Joliet, Ill. A7 .....10.26  
 Kansas City, Mo. S5 .....10.51  
 Kokomo, Ind. C16 .....10.36  
 Los Angeles B3 .....10.36  
 Minneapolis, Colo. C10 .....11.05  
 Pittsburgh, Calif. C11 .....11.04  
 S. Chicago, Ill. R2 .....10.26  
 S. San Francisco C10 .....11.04  
 Sparrows Pt., Md. B2 .....10.36  
 Sterling, Ill. (37) N15 .....10.36

**Coil No. 6500 Stand.**  
 Alabama City, Ala. R2 .....\$10.60  
 Atlanta A11 .....10.70  
 Bartonville, Ill. K4 .....10.70  
 Buffalo W12 .....10.60  
 Chicago W13 .....10.60  
 Crawfordville, Ind. M8 .....10.70  
 Donora, Pa. A7 .....10.60  
 Duluth A7 .....10.60  
 Fairfield, Ala. T2 .....10.60  
 Houston S5 .....10.85

Jacksonville, Fla. M8 .....11.16  
 Johnstown, Pa. B2 .....10.60  
 Joliet, Ill. A7 .....10.60  
 Kansas City, Mo. S5 .....10.85  
 Kokomo, Ind. C16 .....10.70  
 Los Angeles B3 .....11.40  
 Minneapolis, Colo. C10 .....10.85  
 Pittsburgh, Calif. C11 .....11.40  
 S. Chicago, Ill. R2 .....10.60  
 S. San Francisco C10 .....11.40  
 Sparrows Pt., Md. B2 .....10.70  
 Sterling, Ill. (37) N15 .....10.70

**Coil No. 6500 Interim**  
 Alabama City, Ala. R2 .....\$10.65  
 Atlanta A11 .....10.75  
 Bartonville, Ill. K4 .....10.75  
 Buffalo W12 .....10.65  
 Chicago W13 .....10.65  
 Crawfordville, Ind. M8 .....10.75  
 Donora, Pa. A7 .....10.65  
 Duluth A7 .....10.65  
 Fairfield, Ala. T2 .....10.65  
 Houston S5 .....10.90  
 Jacksonville, Fla. M8 .....11.21  
 Johnstown, Pa. B2 .....10.65  
 Joliet, Ill. A7 .....10.65  
 Kansas City, Mo. S5 .....10.90  
 Kokomo, Ind. C16 .....10.75  
 Los Angeles B3 .....11.45  
 Minneapolis, Colo. C10 .....10.90  
 Pittsburgh, Calif. C11 .....11.45  
 S. Chicago, Ill. R2 .....10.65  
 S. San Francisco C10 .....11.45  
 Sparrows Pt., Md. B2 .....10.75  
 Sterling, Ill. (37) N15 .....10.75

**BALE TIES, Single Loop**  
 Alabama City, Ala. R2 .....212  
 Atlanta A11 .....214  
 Bartonville, Ill. K4 .....214  
 Crawfordville, Ind. M8 .....214  
 Donora, Pa. A7 .....212  
 Duluth A7 .....212  
 Fairfield, Ala. T2 .....212  
 Houston S5 .....217  
 Jacksonville, Fla. M8 .....212  
 Joliet, Ill. A7 .....212  
 Kansas City, Mo. S5 .....217  
 Kokomo, Ind. C16 .....214  
 Minneapolis, Colo. C10 .....217  
 Pittsburgh, Calif. C11 .....236  
 S. San Francisco C10 .....236  
 Sparrows Pt., Md. B2 .....214  
 Sterling, Ill. (7) N15 .....214  
 Williamsport, Pa. S19 .....215

**FENCE POSTS**  
 Birmingham C15 .....171  
 Chicago Hts., Ill. C2, I-2 .....172  
 Duluth A7 .....172  
 Franklin, Pa. F5 .....172  
 Huntington, W. Va. C15 .....171  
 Johnstown, Pa. B2 .....172  
 Marion, O. P11 .....172  
 Minneapolis, Colo. C10 .....177  
 Sterling, Ill. (1) N15 .....172  
 Tonawanda, N.Y. B12 .....174

**WIRE, Barbed**  
 Alabama City, Ala. R2 .....193\*\*  
 Aliquippa, Pa. J5 .....190\*  
 Atlanta A11 .....198\*  
 Bartonville, Ill. K4 .....198  
 Crawfordville, Ind. M8 .....198  
 Donora, Pa. A7 .....193\*  
 Duluth A7 .....193\*  
 Fairfield, Ala. T2 .....193\*  
 Houston S5 .....198\*\*  
 Jacksonville, Fla. M8 .....203  
 Johnstown, Pa. B2 .....196\*  
 Joliet, Ill. A7 .....193\*  
 Kansas City, Mo. S5 .....198\*\*  
 Kokomo, Ind. C16 .....195\*  
 Minneapolis, Colo. C10 .....198\*\*  
 Monessen, Pa. P7 .....196\*  
 Pittsburgh, Calif. C11 .....213\*  
 Rankin, Pa. A7 .....193\*  
 S. Chicago, Ill. R2 .....193\*\*  
 S. San Francisco C10 .....213\*\*  
 Sparrows Pt., Md. B2 .....198\*  
 Sterling, Ill. (7) N15 .....198\*

**WOVEN FENCE, 9-15 Ga. Col.**  
 Ala. City, Ala. R2 .....187\*\*  
 Aliquippa, Pa. J5 .....190\*  
 Atlanta A11 .....192\*  
 Bartonville, Ill. K4 .....192\*  
 Crawfordville, Ind. M8 .....192  
 Donora, Pa. A7 .....187\*  
 Duluth A7 .....187\*  
 Fairfield, Ala. T2 .....187\*  
 Houston S5 .....192\*\*  
 Jacksonville, Fla. M8 .....197  
 Johnstown, Pa. (43) B2 .....190\*  
 Joliet, Ill. A7 .....187\*  
 Kansas City, Mo. S5 .....192\*\*  
 Kokomo, Ind. C16 .....189\*  
 Minneapolis, Colo. C10 .....192\*\*  
 Pittsburgh, Calif. C11 .....210\*  
 Rankin, Pa. A7 .....187\*  
 S. Chicago, Ill. R2 .....187\*\*  
 Sterling, Ill. (7) N15 .....192\*

**WIRE (16 gage) An'd Galv.**  
 Ala. City, Ala. R2 .....17.15  
 Aliquippa, Pa. J5 .....18.95  
 Bartonville, Ill. K4 .....17.25  
 Cleveland A7 .....17.15

Crawf'dsville M8 .....17.25  
 Fostoria, O. S1 .....17.65  
 Houston S5 .....17.40  
 Jacksonville M8 .....17.60  
 Johnstown B2 .....17.15  
 Kan. City, Mo. S5 .....17.40  
 Kokomo C16 .....17.25  
 Minneapolis C10 .....17.40  
 P. M'r, Mass. W12 .....17.45  
 Pitts., Calif. C11 .....17.50  
 Sparrows Pt. B2 .....17.25  
 Sterling (37) N15 .....17.25  
 Waukegan A7 .....17.15  
 Worcester A7 .....17.45

**WIRE, Merchant Quality**  
 (6 to 8 gage) An'd Galv.  
 Ala. City, Ala. R2 .....8.65  
 Aliquippa J5 .....8.65  
 Atlanta (48) A11 .....8.75  
 Bartonville (48) K4 .....8.75  
 Buffalo W12 .....8.65  
 Cleveland A7 .....8.65  
 Crawfordville M8 .....8.75  
 Donora, Pa. A7 .....8.65  
 Duluth A7 .....8.65  
 Fairfield (48) T2 .....8.65  
 Houston (48) S5 .....8.90  
 Jacksonville, Fla. M8 .....9.00  
 Johnstown B2 (48) S5 .....9.325  
 Joliet, Ill. A7 .....8.65  
 Kans. City (48) S5 .....8.90  
 Kokomo C16 .....8.75  
 Los Angeles B3 .....9.60  
 Minneapolis C10 .....8.90  
 Monessen P7 (48) S5 .....8.65  
 Palmer, Mass. W12 .....8.95  
 Pitts., Calif. C11 .....9.60  
 Rankin, Pa. A7 .....8.65  
 S. Chicago R2 .....8.65  
 S. San Fran. C10 .....9.60  
 Spar'ws Pt. B2 (48) S5 .....9.425  
 Sterling (48) N15 .....8.90  
 Sterling (1) (48) S5 .....8.90  
 Struthers, O. (48) Y1 .....8.65  
 Worcester, Mass. A7 .....8.95

Based on zinc price of:  
 \*13.50. †5c. ‡10c. §Less  
 than 10c. ¶10.50c. \*\*Subject  
 to zinc equalization extras.

**FASTENERS**  
 (Base discounts, full con-  
 tainer quantity, per cent off  
 list, f.o.b. mill)

**BOLTS**  
**Carriage, Machine Bolts**  
 Full Size Body (cut thread)  
 1/2 in. and smaller:  
 6 in. and shorter... 49.0  
 Longer than 6 in. ... 39.0  
 1/2 in. thru 1 in.:  
 6 in. and shorter... 39.0  
 Longer than 6 in. ... 35.0  
 1 1/2 in. and larger:  
 All lengths ..... 35.0  
 Undersized Body (rolled  
 thread)  
 1/2 in. and smaller:  
 6 in. and shorter... 49.0  
**Carriage, Machine, Lag Bolts**  
 Hot Galvanized:  
 1/2 in. and smaller:  
 6 in. and shorter... 29.0  
 Longer than 6 in. ... 15.0  
 1/2 in. and larger:  
 All lengths ..... 12.0  
**Lag Bolts (all diam.)**  
 6 in. and shorter... 49.0  
 Longer than 6 in. ... 39.0  
**Plow and Tap Bolts**  
 1/2 in. and smaller by 6  
 in. and shorter ..... 49.0  
 Larger than 1/2 in. or  
 longer than 6 in. ... 39.0  
**Blank Bolts** ..... 39.0  
**Step, Elevator, Tire Bolts**  
 Stove Bolts, Slotted:  
 1/2 to 3/4 in. incl.,  
 3 in. and shorter... 55.0  
 1/2 to 3/4 in., inclu-  
 sive ..... 55.0

**NUTS**  
**Reg. & Heavy Square Nuts:**  
 All sizes ..... 55.5  
**Square Nuts, Reg. & Heavy, Hot Galvanized:**  
 All sizes ..... 41.0  
**Hex Nuts, Reg. & Heavy, Hot Pressed:**  
 1/2 in. and smaller... 60.5  
 1/2 in. to 1 in., incl. 55.5  
 1 in. to 1 1/2 in., incl. 58.5  
 1 1/2 in. and larger... 53.5  
**Hex Nuts, Reg. & Heavy, Cold Punched:**  
 1/2 in. and smaller... 60.5  
 1/2 in. to 1 1/2 in., incl. 55.5  
 1 1/2 in. and larger... 53.5  
**Hex Nuts, All Types, Hot Galvanized:**  
 1/2 in. and smaller... 46.5  
 1/2 in. to 1 in., incl. 41.5  
 1 in. to 1 1/2 in., incl. 46.5

**Hex Nuts, Semifinished, Heavy (Incl. Slotted):**  
 1/2 in. and smaller... 60.5  
 1/2 in. to 1 1/2 in., incl. 55.5  
 1 1/2 in. and larger... 53.5  
**Hex Nuts, Finished (Incl. Slotted and Castellated):**  
 1 in. and smaller... 63.0  
 1 1/2 in. to 1 1/2 in., incl. 59.0  
 1 1/2 in. and larger... 53.5  
**Semifinished Hex Nuts, Reg. (Incl. Slotted):**  
 1/2 in. and smaller... 60.5  
 1/2 in. to 1 in., incl. 63.0  
 1 in. to 1 1/2 in., incl. 59.0  
 1 1/2 in. and larger... 53.5

**CAP AND SETSCREWS**  
 (Base discounts, packages, per cent off list, f.o.b. mill)

**Hex Head Capscrews, Coarse or Fine Thread, Bright:**  
 6 in. and shorter:  
 1/2 in. and smaller... 40.0  
 1/2 in. and 1 in. diam. .... 22.0

**BOILER TUBES**  
 Net base c.l. prices, dollars per 100 ft. mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	C.D. H.R.	Elec. Weld H.R.
1	13	25.98	23.54	
1 1/2	13	30.78	23.36	
2	13	29.03	34.01	25.83
2 1/2	13	34.29	40.18	30.51
3	13	38.44	45.05	34.20
3 1/2	13	43.29	50.75	38.52
4	12	46.99	55.06	41.81
4 1/2	12	51.76	60.65	46.05
5	12	56.04	65.67	49.88
6	12	59.76	70.03	53.19

**RAILWAY MATERIALS**

Standard	Standard	Standard	Standard
No. 1	No. 2	All 60 lb	No. 2 Under
Bessemer, Pa. U5	5.525	5.425	6.50
Esney, Ala. T2	5.525	5.425	6.50
Fairfield, Ala. T2	5.525	5.425	6.50
Gary, Ind. U5	5.525	5.425	6.50
Huntington, W. Va. C15	5.525	5.425	6.50
Indiana Harbor, Ind. I-2	5.525	5.425	6.50
Johnstown, Pa. B2	5.525	5.425	6.50
Lackawanna, N.Y. B2	5.525	5.425	6.50
Minneapolis, Colo. C10	5.525	5.425	7.00
Steeltown, Pa. B2	5.525	5.425	6.50
Williamsport, Pa. S19	5.525	5.425	6.50

**TIE PLATES**  
 Fairfield, Ala. T2 .....6.60  
 Gary, Ind. U5 .....6.60  
 Ind. Harbor, Ind. I-2 .....6.60  
 Lackawanna, N.Y. B2 .....6.60  
 Minneapolis, Colo. C10 .....6.60  
 Seattle B3 .....6.75  
 Steeltown, Pa. B2 .....6.60  
 Torrance, Calif. C11 .....6.75

**JOINT BARS**  
 Bessemer, Pa. U5 .....6.975  
 Fairfield, Ala. T2 .....6.975  
 Ind. Harbor, Ind. I-2 .....6.975  
 Joliet, Ill. U5 .....6.975  
 Lackawanna, N.Y. B2 .....6.975  
 Minneapolis, Colo. C10 .....6.975  
 Steeltown, Pa. B2 .....6.975

**AXLES**  
 Ind. Harbor, Ind. S13 .....8.775  
 Johnstown, Pa. B2 .....8.775

**Footnotes**

- (1) Chicago base.
- (2) Angles, flats, bands.
- (3) Merchant.
- (4) Reinforcing.
- (5) 1 1/2 to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
- (6) Chicago or Birm. base.
- (7) Chicago base 2 cols. lower.
- (8) 13 Ga. and heavier.
- (9) Merchant quality; and 0.35c for special quality.
- (10) Pittsburgh base.
- (11) Cleveland & Pitts. base.
- (12) Worcester, Mass. base.
- (13) Add 0.25c for 17 Ga. & heavier.
- (14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
- (15) 3/4" and thinner.
- (16) 40 lb and under.
- (17) Flats only; 0.25 in. & heavier.
- (18) To dealers.
- (19) Chicago & Pitts. base.
- (20) Plus 1c per 100 lb.
- (21) New Haven, Conn. base.
- (22) Deld. San Francisco Bay area.
- (23) Special quality.
- (24) Deduct 0.15c, finer than 15 Ga.

Longer than 6 in.:  
 1/2 in. and smaller... 8.0  
 1/2 in. and 1 in. diam. .... +6.0  
**High Carbon, Heat Treated:**  
 6 in. and shorter:  
 1/2 in. and smaller... 26.0  
 1/2 in. and 1 in. diam. .... 3.0  
 Longer than 6 in.:  
 1/2 in. and smaller... +13.0  
 1/2 in. and 1 in. diam. .... +32.0  
**Flat Head Capscrews:**  
 1/2 in. and smaller... +76.0  
**Setscrews, Square Head, Cup Point, Coarse Thread:**  
 Through 1 in. diam.:  
 6 in. and shorter... Net  
 Longer than 6 in. ... +23

**RIVETS**  
 F.o.b. Cleveland and/or freight equalized with Pitts-  
 burgh, f.o.b. Chicago and/or freight equalized with Bir-  
 mingham except where equal-  
 ization is too great.  
 Structural 1/2 in., larger 12.25  
 3/4 in. under: List less 19%

Standard	Standard	Standard	Standard
No. 1	No. 2	All 60 lb	No. 2 Under
Bessemer, Pa. U5	5.525	5.425	6.50
Esney, Ala. T2	5.525	5.425	6.50
Fairfield, Ala. T2	5.525	5.425	6.50
Gary, Ind. U5	5.525	5.425	6.50
Huntington, W. Va. C15	5.525	5.425	6.50
Indiana Harbor, Ind. I-2	5.525	5.425	6.50
Johnstown, Pa. B2	5.525	5.425	6.50
Lackawanna, N.Y. B2	5.525	5.425	6.50
Minneapolis, Colo. C10	5.525	5.425	7.00
Steeltown, Pa. B2	5.525	5.425	6.50
Williamsport, Pa. S19	5.525	5.425	6.50

**TRACK BOLTS, Untreated**  
 Cleveland R2 .....14.75  
 Kansas City, Mo. S5 .....14.75  
 Lebanon, Pa. B2 .....14.75  
 Minneapolis, Colo. C10 .....14.75  
 Pittsburgh P14 .....14.75  
 Seattle B3 .....15.25

**SCREW SPIKES**  
 Lebanon, Pa. B2 .....14.50

**STANDARD TRACK SPIKES**  
 Fairfield, Ala. T2 .....9.75  
 Ind. Harbor, Ind. I-2, Y1 .....9.75  
 Kansas City, Mo. S5 .....9.75  
 Lebanon, Pa. B2 .....9.75  
 Minneapolis, Colo. C10 .....9.75  
 Pittsburgh J5 .....9.75  
 Seattle B3 .....10.25  
 S. Chicago, Ill. R2 .....9.75  
 Struthers, O. Y1 .....9.75  
 Youngstown R2 .....9.75

**TRACK BOLTS, Untreated**  
 Cleveland R2 .....14.75  
 Kansas City, Mo. S5 .....14.75  
 Lebanon, Pa. B2 .....14.75  
 Minneapolis, Colo. C10 .....14.75  
 Pittsburgh P14 .....14.75  
 Seattle B3 .....15.25

**SCREW SPIKES**  
 Lebanon, Pa. B2 .....14.50

**STANDARD TRACK SPIKES**  
 Fairfield, Ala. T2 .....9.75  
 Ind. Harbor, Ind. I-2, Y1 .....9.75  
 Kansas City, Mo. S5 .....9.75  
 Lebanon, Pa. B2 .....9.75  
 Minneapolis, Colo. C10 .....9.75  
 Pittsburgh J5 .....9.75  
 Seattle B3 .....10.25  
 S. Chicago, Ill. R2 .....9.75  
 Struthers, O. Y1 .....9.75  
 Youngstown R2 .....9.75

- (25) Bar mill bands.
- (27) Bar mill sizes.
- (28) Bonderized.
- (29) Youngstown base.
- (30) Sheared; for universal mill add 0.45c.
- (31) Widths over 1/2 in.; 7.60c. for widths 1/2 in. and under by 0.125 in. and thinner.
- (32) Buffalo base.
- (33) To jobbers, deduct 20c.
- (34) 9.60c for cut lengths.
- (35) 72" and narrower.
- (36) 54" and narrower.
- (37) Chicago base, 10 points higher.
- (38) 14 Ga. & lighter; 48" & narrower.
- (39) 48" and narrower.
- (40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
- (41) 9.00c for cut lengths.
- (42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
- (43) 9-14 1/2 Ga.
- (44) To fabricators.
- (45) 0.025 in. and lighter, over 0.025 in., 8.20c.
- (46) 7 Ga.
- (47) 3 1/2 in. and smaller rounds; 9.30c. over 3 1/2 in. and other shapes.



# SEAMLESS STANDARD PIPE, Threaded and Coupled

List Per Ft . . . . .	2	2½	3	3½	4	5	6	
Pounds Per Ft . . . . .	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	
	3.68	5.82	7.62	9.20	10.89	14.81	19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5 . . . .	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5
Ambridge, Pa. N2 . . . .	+9.25		+2.75		+0.25		1.25	
Lorain, O. N3 . . . . .	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5
Youngstown Y1 . . . . .	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5

Carload discounts from list, %

# ELECTRIC STANDARD PIPE, Threaded and Coupled

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
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# BUTTWELD STANDARD PIPE, Threaded and Coupled

Size—Inches	¾	1	1½	2	2½	3	3½	4	5	6
List Per Ft	5.5c	6c	6c	6c	8.5c	11.5c	17c	17c	23c	23c
Pounds Per Ft	0.24	0.42	0.57	0.6c	0.85	1.13	1.68	1.68	2.28	2.28
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5					5.25	+10	8.25	+6	11.75	+1.5
Alton, Ill. L1					3.25	+12	6.25	+8	9.75	+3.5
Benwood, W. Va. W10	4.5	+22	+7.5	+31	5.25	+10	8.25	+6	11.75	+1.5
Butler, Pa. F6	5.5	+21	+6.5	+30						
Etna, Pa. N2					5.25	+10	8.25	+6	11.75	+1.5
Fairless, Pa. N3					3.25	+12	6.25	+8	9.75	+3.5
Fontana, Calif. K1					+8.25	+23.5	+5.25	+19.5	+1.75	+15
Indiana Harbor, Ind. Y1					4.25	+11	7.25	+7	10.75	+2.5
Lorain, O. N3					5.25	+10	8.25	+6	11.75	+1.5
Sharon, Pa. S4	5.5	+21	+6.5	+30						
Sharon, Pa. M6					5.25	+10	8.25	+6	11.75	+1.5
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	3.25	+12	6.25	+8	9.75	+3.5
Wheatland, Pa. W9	5.5	+21	+6	+30	5.25	+10	8.25	+6	11.75	+1.5
Youngstown R2, Y1					5.25	+10	8.25	+6	11.75	+1.5

Carload discounts from list, %

Size—Inches	1½	2	2½	3	3½	4
List Per Ft	27.5c	37c	53.5c	76.5c	92c	\$1.09
Pounds Per Ft	2.73	3.68	5.82	7.62	9.20	10.89
	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5

\*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

# Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Re-rolling— Ingot Slabs	Forg- ing Billets	H.R. Strip	Wire Rods; C.F. Wire	Bars; Struc- tural Shapes	Plates	Sheets
201	22.00	27.00	36.00	40.75	43.00	45.00	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	43.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50
303		32.00	41.00		45.50	48.00	50.00
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75
304L			48.25	51.50	53.00	55.50	58.50
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25
309	39.75	49.50	57.75	64.50	63.75	67.00	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75
314					86.50		92.75
316	39.75	49.50	62.25	69.25	69.25	73.00	81.50
316 L			70.00	76.50	77.00	80.75	89.25
317	48.00	60.00	76.75	82.25	86.25	90.75	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75
330			106.75		106.75	106.75	105.50
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75
403			32.00		35.75	37.75	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00
416			28.75		32.50	34.25	36.25
420		33.50	34.25	41.75	39.25	41.25	45.25
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00
430F			29.50		33.00	34.75	36.75
431		28.75	37.75		42.00	44.25	46.00
446			39.25	59.00	44.25	46.50	47.75

**Stainless Steel Producers Are:** Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Pipe & Specialty Wire Co. Inc.; McInnes Steel Co.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

# Clad Steel

Stainless	Plates Carbon Base				Sheets Carbon Base
	5%	10%	15%	20%	20%
302	34.70	37.95	42.25	46.70	37.50
304	36.90	40.55	45.10	49.85	40.00
304L	40.35	44.40	49.50	54.50	58.75
316	45.05	49.35	54.70	60.10	
316 L	47.30	53.80	61.45	69.10	
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	
410	28.15	29.55	33.10	36.70	
430	28.30	29.80	33.55	37.25	
Inconel	48.90	59.55	70.15	80.85	
Nickel	41.65	51.95	62.30	72.70	
Nickel, Low Carbon	41.95	52.60	63.30	74.15	
Monel	43.35	53.55	63.80	74.05	
Copper*					46.00

Strip, Carbon Base—Cold Rolled—10% Both Sides 33.95 40.25

\*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

# Tool Steel

Grade	\$ per lb	Grade	\$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

W	Cr	V	Mo	\$ per lb
20.25	4.25	1.6	12.25	4.285
18.25	4.25	1	4.75	2.500
18	4	2	9	2.870
18	4	2		1.960
18	4	1		1.795
9	3.5			1.395
13.5	4	3		2.060
13.75	3.75	2	5	2.440
6.4	4.5	1.9		1.300
6	4	3		1.545
1.5	4	1	8.5	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.



# Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malleable	Bessemer		Basic	No. 2 Foundry	Malleable	Bessemer
<b>Birmingham District</b>					<b>Youngstown District</b>				
Alabama City, Ala. R2	62.00	62.50	.....	.....	Hubbard, Ohio Y1	.....	.....	66.50	.....
Birmingham R2	62.00	62.50†	.....	.....	Sharpsville, Pa. S6	66.00	.....	66.50	67.00
Birmingham U6	.....	62.50†	66.50	.....	Youngstown Y1	.....	.....	66.50	67.00
Woodward, Ala. W15	62.00**	62.50†	66.50	.....	Mansfield, Ohio, deld.	70.90	.....	71.40	71.90
Cincinnati, deld.	.....	70.20	.....	.....	Duluth I-3	66.00	66.50	66.50	67.00
<b>Buffalo District</b>					Erie, Pa. I-3	66.00	66.50	66.50	67.00
Buffalo H1, R2	66.00	66.50	67.00	67.50	Everett, Mass. E1	67.50	68.00	68.50	.....
N. Tonawanda, N.Y. T9	.....	66.50	67.00	67.50	Fontana, Calif. K1	75.00	75.50	.....	.....
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50	Geneva, Utah C11	66.00	66.50	.....	.....
Boston, deld.	77.29	77.79	78.29	.....	Granite City, Ill. G4	67.90	68.40	68.90	.....
Rochester, N.Y., deld.	69.02	69.52	70.02	.....	Ironton, Utah C11	66.00	66.50	.....	.....
Syracuse, N.Y., deld.	70.12	70.62	71.12	.....	Minnequa, Colo. C10	68.00	68.50	69.00	.....
<b>Chicago District</b>					Rockwood, Tenn. T3	.....	62.50†	66.50	.....
Chicago I-3	66.00	66.50	66.50	67.00	Toledo, Ohio I-3	66.00	66.50	66.50	67.00
S. Chicago, Ill. R2	66.00	.....	66.50	.....	Cincinnati, deld.	72.54	73.04	.....	.....
S. Chicago, Ill. W14	66.00	.....	66.50	67.00	**Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.				
Milwaukee, deld.	68.62	69.12	69.12	69.62	†Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.50.				
Muskegon, Mich., deld.	.....	74.12	74.12	.....	<b>PIG IRON DIFFERENTIALS</b>				
<b>Cleveland District</b>					<b>Silicon:</b> Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.				
Cleveland R2, A7	66.00	66.50	66.50	67.00	<b>Manganese:</b> Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.				
Akron, Ohio, deld.	69.12	69.62	69.62	70.12	<b>Nickel:</b> Under 0.50% no extra; 0.50-0.74%, inclusive, add \$2 per ton and each additional 0.25%, add \$1 per ton.				
<b>Mid-Atlantic District</b>					<b>BLAST FURNACE SILVERY PIG IRON, Gross Ton</b>				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50	(Base 6.00-6.50% silicon; add \$1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add \$1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add \$1 for each 0.50% Mn over 1%)				
Chester, Pa. P4	66.50	67.00	67.50	.....	Jackson, Ohio I-3, J1	.....	.....	78.00	.....
Swedeland, Pa. A3	68.00	68.50	69.00	69.50	Buffalo H1	.....	.....	79.25	.....
New York, deld.	.....	75.10	75.60	.....	<b>ELECTRIC FURNACE SILVERY IRON, Gross Ton</b>				
Newark, N.J., deld.	72.29	72.79	73.29	73.79	(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1.25 for each 0.50% Mn over 1%; \$2 per gross ton premium for 0.045% max P; Calvert City, Ky. P15				
Philadelphia, deld.	70.01	70.51	71.01	71.59	Niagara Falls, N.Y. P15	.....	.....	99.00	.....
Troy, N.Y. R2	68.00	68.50	69.00	69.50	Keokuk, Iowa Open-hearth & Fdry, \$9 freight allowed K2	.....	.....	103.50	.....
<b>Pittsburgh District</b>					Keokuk, Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max frgt allowed up to \$9, K2	.....	.....	106.50	.....
Neville Island, Pa. P6	66.00	66.50	66.50	67.00	<b>LOW PHOSPHORUS PIG IRON, Gross Ton</b>				
Pittsburgh (N&S sides), Aliquippa, deld.	.....	67.95	67.95	68.48	Lyles, Tenn. T3 (Phos. 0.035% max)	.....	.....	\$78.50	.....
McKees Rocks, Pa., deld.	.....	67.60	67.60	68.13	Troy, N.Y. R2 (Phos. 0.035% max)	.....	.....	74.00	.....
Lawrenceville, Homestead, Wilmerding, Monaca, Pa., deld.	.....	68.26	68.26	68.79	Philadelphia, deld.	.....	.....	82.27	.....
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35	Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	.....	.....	71.00	.....
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63	Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	.....	.....	71.00	.....
Midland, Pa. C18	66.00	.....	.....	.....	Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	.....	.....	71.00	.....
					Neville Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	.....	.....	71.00	.....

# Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Molina, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS			STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Atlanta	8.59§	9.86§	.....	8.64	9.01	10.68	.....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.61	8.76	9.06	11.34 #	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	8.23	8.60	10.57	.....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	9.42	9.73	12.90 #	15.28	9.63	9.72	11.20
Buffalo	8.40	9.00	10.07	8.50	8.80	10.90 #	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	8.40	8.77	10.46	.....	8.88	8.80	10.66
Chicago	8.20	9.45	10.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.05	8.54	8.92	9.31	14.96	9.18	8.93	10.21
Cleveland	8.18	9.45	9.95	8.33	8.69	10.80 #	14.74	9.01	8.79	10.11
Dallas	8.85	10.15	.....	9.00	8.95	11.01	.....	9.00	9.45	10.70
Denver	9.38	11.75	.....	9.41	9.78	11.10	.....	9.82	9.74	11.06
Detroit	8.43	9.70	10.35	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95†	8.50	8.75	9.05†	.....	9.00	8.85	10.10
Houston	8.45	9.75	8.45	8.60	8.55	11.10	.....	8.60	9.05	10.30
Jackson, Miss.	8.52	9.79	.....	8.57	8.94	10.68	.....	8.97	8.90	10.74
Los Angeles	7.85	10.75	11.65	7.90	7.90	12.10	.....	7.95	7.90	10.05
Milwaukee	8.33	9.58	10.13	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.35	8.58	8.95	9.15	.....	8.99	8.91	.....
New York	8.87	10.13	10.56	9.31	9.57	12.76 #	15.09	9.35	9.43	10.71
Norfolk, Va.	8.05	.....	.....	8.55	8.60	10.80	.....	8.95	8.45	9.95
Philadelphia	8.00	8.90	9.87	8.69	8.65	11.51 #	15.01	8.50	8.77	9.77**
Pittsburgh	8.18	9.45	10.35	8.33	8.60	10.80 #	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	9.55	8.65	14.65 #	15.95	8.65	8.30	11.50
Richmond, Va.	8.45	.....	10.40	9.15	9.15	.....	.....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.61	8.84	9.21	9.66	.....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	9.45	9.70	13.00	16.10	9.50	9.60	12.00
Seattle	9.95	11.15	12.00	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	9.48	9.74	.....	.....	9.57	9.57	10.91
Spokane	9.95	11.15	12.00	10.00	10.10	14.05	17.20	9.80	9.70	12.10
Washington	8.48	9.58	.....	9.06	9.15	9.73	.....	9.35	8.86	10.36

\*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; \*\*¼ in. and heavier; ††as annealed; ‡‡over 3 in.; §over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg., 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; §—400 to 9999 lb; #—1000 to 1999 lb; #—2000 to 3999 lb; ‡—2000 lb and over.



# Scrap Trading Sags Over Holiday

Demand fades out as steelmaking operations are sharply curtailed. Prices mark time; STEEL's composite on the prime grade holds unchanged at \$33.17

Scrap Prices, Page 88

**Pittsburgh**—Steel production fell sharply during Christmas week. Demand for scrap was virtually nonexistent. The only activity was in railroad material, where latest lists resulted in improvements averaging \$1 per ton.

**Buffalo**—Except for cast iron, all grades of scrap have been reduced \$1 a ton in this market, reflecting a complete lack of buying interest. No. 1 heavy melting is quoted at \$30-\$31, No. 2 heavy melting \$27-\$28, and No. 2 bundles, \$25-\$26.

**St. Louis**—Steadily downward scrap trade has again trimmed prices \$1 to \$3. Even cast grades, which long had held fairly level, took a similar drop.

**Philadelphia**—Scrap prices are unchanged here, but additional small sales of No. 1 heavy melting have been made at \$37. Material is coming out sluggishly.

**Boston**—The freight rate on iron and steel scrap, Waterville, Maine, (Lewiston to Boston) has been reduced from \$8.29 a gross ton to \$6.91.

**Chicago**—Although the scrap market retains the strength which developed a week or so ago, it has a negligible effect on prices. The firmer tone comes from broker acquisitions of material to fill contracts which are subject to mill cancellation if they are not completed by end of December. For that reason, brokers have been bidding \$1 or \$2 a ton more for the grades they need.

**Cleveland**—Demand for scrap was virtually nonexistent during Christmas week, with steelmaking operations sharply curtailed. Prices are unchanged, but they are nominal. The trend of the market is expected to hinge on bidding on month-end industrial lists.

**Cincinnati**—Open-hearth grades of scrap are off another \$1, bringing No. 1 heavy melting to \$28-\$29, brokers' buying price. There is no mill buying, and brokers anticipate a drop in industrial lists. Last

year at this time brokers were selling top steelmaking grades of scrap at \$65 a ton.

**Birmingham**—No activity is expected in the scrap market until after the turn of the year. Dealers are reluctant to sell at prevailing low prices. A railroad list that came out recently did not attract any domestic bidders.

**Los Angeles**—Prices dropped an average of \$5 a ton on most scrap grades as trading virtually ceased over the holiday. No. 1 heavy melting at \$36, is off \$3; so is No. 2 heavy melting at \$34. No. 1 bundles dropped \$5 a ton to \$33; No. 2 bundles, at \$24 are off \$7; while No. 1 cupola at \$48 is down \$6.

**Seattle**—The local scrap market is unchanged. Dealers are marking time. Larger buyers are well stocked.

**San Francisco**—A quiet, but steady scrap market is anticipated in this area going into the new year.

## Warehouse . . .

Warehouse Prices, Page 86

Distributors, including some who had reported an increase in sales early this month, booked disappointingly small tonnage after mid-December. Most small fabricators even suspended replacement buying. This is a seasonally slow period, but demand was much lighter than usual this year.

Moderate sales increases in January are predicted, but no firm expects major gains. Mills probably will be able to accept small tonnage orders for quick delivery through the first half of 1958. This tends to restrict purchases to nearby needs.

Price weakness is developing in sheets in many districts. Several smaller or "fringe" operators are cutting their prices, although all major distributors in the East and Midwest are maintaining price schedules.

In the Detroit area, business is

holding up well on specialty stainless steel. One distributor says December tonnages have equaled those of November and the outlook is promising for January.

## Pig Iron Production Drops

Blast furnace operations dropped to 81 per cent of capacity last month from 88.4 per cent in October and 100.1 per cent in November, 1956, reports the American Iron & Steel Institute.

Production of pig iron last month came to 5,711,242 tons, compared with 6,454,450 tons in October and 6,977,457 tons in the like month a year ago. This brought the total for the first 11 months to 73,344,087 tons, compared with 68,019,062 tons for the like period a year ago. Including ferromanganese and spiegeleisen, blast furnace output amounted to 5,779,879 tons in November, compared with 6,519,478 tons in October; and 74,059,991 tons in the first 11 months of this year compared with 68,617,562 tons for the 1956 period.

## Pig Iron . . .

Pig Iron Prices, Page 86

Activity in the pig iron market was at the lowest level of the year during the final two weeks of 1957. A pickup in orders for castings failed to come up to expectations in the fourth quarter, causing foundries to curtail purchases and reduce inventories.

This situation forced blast furnace operators to shut down many stacks. U. S. Steel idled its No. 12 blast furnace at Gary, Ind., for relining and its No. 2 furnace at South Chicago, Ill. Of the Chicago district's 43 blast furnaces, only 29 are operating. This is the lowest number, except for strike periods, since August, 1954.

Crucible Steel Co. of America banked a 600-ton capacity blast furnace at its Midland (Pa.) Works on Dec. 22. This left the plant with only one of three stacks operating.

## Sheets, Strip . . .

Sheet & Strip Prices, Pages 82 & 83

Early first quarter quickening in sheet demand is anticipated, but producers will enter the New Year (Please turn to Page 93)



# Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Dec. 24, 1957. Changes shown in italics.

## STEELMAKING SCRAP COMPOSITE

Dec. 24 .....	\$33.17
Dec. 18 .....	33.17
Nov. Avg. ....	33.17
Dec. 1956 .....	64.29
Dec. 1952 .....	43.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

## YOUNGSTOWN

No. 1 heavy melting...	29.00-30.00
No. 2 heavy melting...	22.00-23.00
No. 1 bundles .....	29.00-30.00
No. 2 bundles .....	22.00-23.00
No. 1 busheling .....	29.00-30.00
Machine shop turnings...	13.00-14.00
Short shovel turnings...	17.00-18.00
Cast iron borings .....	17.00-18.00
Low phos. ....	33.00-34.00
Electric furnace bundles	33.00-34.00

### Railroad Scrap

No. 1 R.R. heavy melt.	34.50-35.50
------------------------	-------------

## CHICAGO

No. 1 heavy melt., indus.	32.00-33.00
No. 1 hvy melt., dealer	29.00-30.00
No. 2 heavy melting...	28.00-29.00
No. 1 factory bundles...	34.00-35.00
No. 1 dealer bundles...	30.00-31.00
No. 2 bundles .....	19.00-20.00
No. 1 busheling, indus.	32.00-33.00
No. 1 busheling, dealer	29.00-30.00
Machine shop turnings...	15.00-16.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings...	17.00-18.00
Cast iron borings .....	17.00-18.00
Cut structurals, 3 ft. ...	40.00-41.00
Punchings & plate scrap	41.00-42.00

### Cast Iron Grades

No. 1 cupola .....	38.00-39.00
Stove plate .....	34.00-35.00
Unstripped motor blocks	29.00-30.00
Clean auto cast .....	42.00-43.00
Drop broken machinery...	42.00-43.00

### Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
R.R. malleable .....	45.00-46.00
Rails, 2 ft and under...	49.00-50.00
Rails, 18 in. and under	50.00-51.00
Angles, splice bars .....	46.00-47.00
Axles .....	49.00-50.00
Rails, rerolling .....	49.00-50.00

### Stainless Steel Scrap

18-8 bundles & solids...	190.00-200.00
18-8 turnings .....	90.00-100.00
430 bundles & solids...	80.00-90.00
430 turnings .....	50.00-55.00

## DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting ..	20.00-21.00
No. 2 heavy melting ..	18.00-19.00
No. 1 bundles .....	20.00-21.00
No. 2 bundles .....	18.00-19.00
No. 1 busheling .....	20.00-21.00
Machine shop turnings...	8.00-9.00
Mixed borings, turnings	9.00-10.00
Short shovel turnings...	10.00-11.00
Punchings & plate scrap	26.00-27.00

### Cast Iron Grades

No. 1 cupola .....	30.00
Stove plate .....	24.00
Charging box cast .....	24.00
Heavy breakable .....	24.00
Unstripped motor blocks	15.00
Clean auto cast .....	33.00
Malleable .....	33.00

†Nominal

## ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting...	32.00
No. 2 heavy melting...	29.00
No. 1 bundles .....	32.00
No. 2 bundles .....	22.00†
No. 1 busheling .....	32.00
Machine shop turnings...	14.00
Short shovel turnings...	16.00

### Cast Iron Grades

No. 1 cupola .....	43.00
Charging box cast .....	32.00
Heavy breakable cast ..	32.00
Unstripped motor blocks	32.00
Clean auto cast .....	43.00
Stove plate .....	37.00

### Railroad Scrap

No. 1 R.R. heavy melt.	36.25†
Rails, 18 in. and under...	47.00†
Rails, random lengths...	42.00†
Rails, rerolling .....	47.00†
Angles, splice bars .....	42.00†

-Nominal

## PHILADELPHIA

No. 1 heavy melting ..	37.00
No. 2 heavy melting ..	31.50-32.50
No. 1 bundles .....	37.00
No. 2 bundles .....	27.00
No. 1 busheling .....	37.00
Electric furnace bundles	37.00
Mixed borings, turnings	22.50
Short shovel turnings...	24.00
Machine shop turnings...	22.00
Heavy turnings .....	31.00
Structurals & plate ..	40.00-41.00
Couplers, springs, wheels	46.00
Rail crops, 2 ft and under	62.00-64.00

### Cast Iron Grades

No. 1 cupola .....	38.00
Heavy breakable cast ..	37.00
Malleable .....	56.00
Drop broken machinery...	49.00-50.00

## NEW YORK

(Brokers' buying prices)

No. 1 heavy melting ..	33.50
No. 2 heavy melting ..	29.00-30.00
No. 1 bundles .....	33.50
No. 2 bundles .....	21.00-22.00
Machine shop turnings	11.00-12.00
Mixed borings, turnings	12.00-13.00
Short shovel turnings ..	14.00-15.00
Low phos. (structurals & plate) .....	45.00-46.00

### Cast Iron Grades

No. 1 cupola .....	34.00-35.00
Unstripped motor blocks	32.00
Heavy breakable .....	33.00-34.00

### Stainless Steel

18-8 sheets, clips, solids	155.00-160.00
18-8 borings, turnings...	55.00-60.00
410 sheets, clips solids	60.00-65.00
430 sheets, clips, solids	75.00-80.00

## BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting ..	23.00-24.00
No. 2 heavy melting ..	20.00-21.00
No. 1 bundles .....	23.00-24.00
No. 2 bundles .....	15.00-16.00
No. 1 busheling .....	22.00-23.00
Machine shop turnings...	9.50-10.00
Mixed borings, turnings	10.50-11.00
Short shovel turnings...	11.00-11.50
No. 1 cast .....	33.00-34.00
Mixed cupola cast .....	28.00-29.00
No. 1 machinery cast ..	35.00-36.00

## BUFFALO

No. 1 heavy melting...	30.00-31.00
No. 2 heavy melting...	27.00-28.00
No. 1 bundles .....	30.00-31.00
No. 2 bundles .....	25.00-26.00
No. 1 busheling .....	30.00-31.00
Mixed borings, turnings	16.00-17.00
Machine shop turnings...	15.00-16.00
Short shovel turnings...	18.00-19.00
Cast iron borings .....	16.00-17.00
Low phos. ....	35.00-36.00

### Cast Iron Grades

No. 1 cupola .....	36.00-37.00
No. 1 machinery .....	41.00-42.00

### Railroad Scrap

Rails, random lengths ...	42.00-43.00
Rails, 3 ft and under...	49.00-50.00
Railroad specialties .....	35.00-36.00

## CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting...	28.00-29.00
No. 2 heavy melting...	23.00-24.00
No. 1 bundles .....	28.00-29.00
No. 2 bundles .....	19.00-20.00
No. 1 busheling .....	28.00-29.00
Machine shop turnings...	14.00-15.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings...	16.00-17.00
Cast iron borings .....	16.00-17.00
Low phos. 18 in. ....	36.00-37.00

### Cast Iron Grades

No. 1 cupola .....	35.00-36.00
Heavy breakable cast...	32.00-33.00
Charging box cast .....	32.00-33.00
Drop broken machinery...	47.00-48.00

### Railroad Scrap

No. 1 R.R. heavy melt	33.00-34.00
Rails, 18 in. and under...	52.00-53.00
Rails, random lengths...	42.00-43.00

## BIRMINGHAM

No. 1 heavy melting ..	29.00-30.00
No. 2 heavy melting ..	24.00-25.00
No. 1 bundles .....	31.00-32.00
No. 2 bundles .....	16.00-17.00
No. 1 busheling .....	31.00-32.00
Cast iron borings .....	12.00-13.00
Short shovel turnings...	22.00-23.00
Machine shop turnings...	20.00-21.00
Bar crops and plates...	38.00-39.00
Structurals & plate ..	38.00-39.00
Electric furnace bundles	35.00-36.00
Electric furnace:	
3 ft and under .....	33.00-34.00
2 ft and under .....	34.00-35.00

### Cast Iron Grades

No. 1 cupola .....	48.00-49.00
Stove plate .....	47.00-48.00
Unstripped motor blocks	38.00-39.00
Charging box cast ....	22.00-23.00
No. 1 wheels .....	37.00-38.00

### Railroad Scrap

No. 1 R.R. heavy melt.	34.00-35.00
Rails, 18 in. and under	48.00-49.00
Rails, rerolling .....	47.00-48.00
Rails, random lengths ...	41.00-42.00
Angles, splice bars ...	40.00-41.00

## SEATTLE

No. 1 heavy melting ..	34.00†
No. 2 heavy melting ..	32.00†
No. 1 bundles .....	33.00†
No. 2 bundles .....	25.00†
Machine shop turnings...	26.00†
Mixed borings, turnings	26.00†
Electric furnace, No. 1.	46.00†

### Cast Iron Grades

No. 1 cupola .....	35.00†
Heavy breakable cast...	32.00†
Unstripped motor blocks	27.00†
Stove plate (f.o.b. plant) .....	25.00†

†Nominal

## LOS ANGELES

No. 1 heavy melting...	36.00
No. 2 heavy melting...	34.00
No. 1 bundles .....	33.00
No. 2 bundles .....	24.00
Machine shop turnings...	15.00
Shoveling turnings .....	19.00
Cast iron borings .....	19.00
Cut structurals and plate 1 ft and under .....	48.00

### Cast Iron Grades

(F.o.b. shipping point)	
No. 1 cupola .....	42.00

### Railroad Scrap

No. 1 R.R. heavy melt.	36.00
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## SAN FRANCISCO

No. 1 heavy melting ..	36.00
No. 2 heavy melting ..	34.00
No. 1 bundles .....	34.00
No. 2 bundles .....	26.00
Machine shop turnings...	20.00
Mixed borings, turnings	20.00
Cast iron borings .....	20.00
Heavy turnings .....	20.00
Short shovel turnings...	20.00
Cut structurals, 3 ft. .	48.00

### Cast Iron Grades

No. 1 cupola .....	45.00
Charging box cast .....	38.00
Stove plate .....	36.00
Heavy breakable cast...	34.00
Unstripped motor blocks	34.00
Clean auto cast .....	45.00
No. 1 wheels .....	36.00
Drop broken machinery	45.00

## HAMILTON, ONT.

No. 1 heavy melting ..	34.00
No. 2 heavy melting ..	29.00
No. 1 bundles .....	34.00
No. 2 bundles .....	24.00
Mixed steel scrap .....	29.00
Mixed borings, turnings	19.00
Busheling, new factory:	
Prepared .....	34.00
Unprepared .....	28.00
Short steel turnings ..	23.00

### Cast Iron Grades†

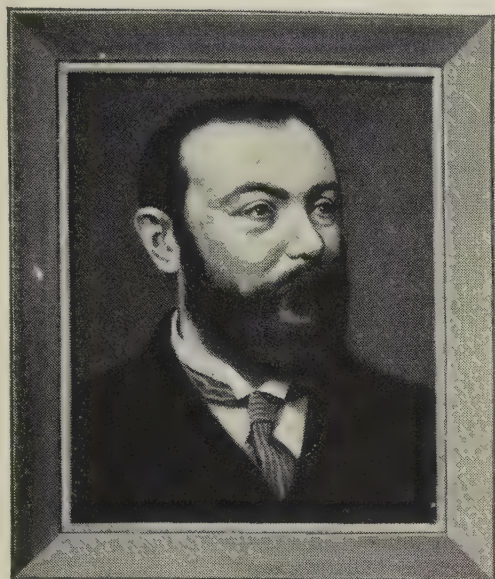
No. 1 machinery cast...	50.00
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†F.o.b. Hamilton, Ont.

\*Nominal

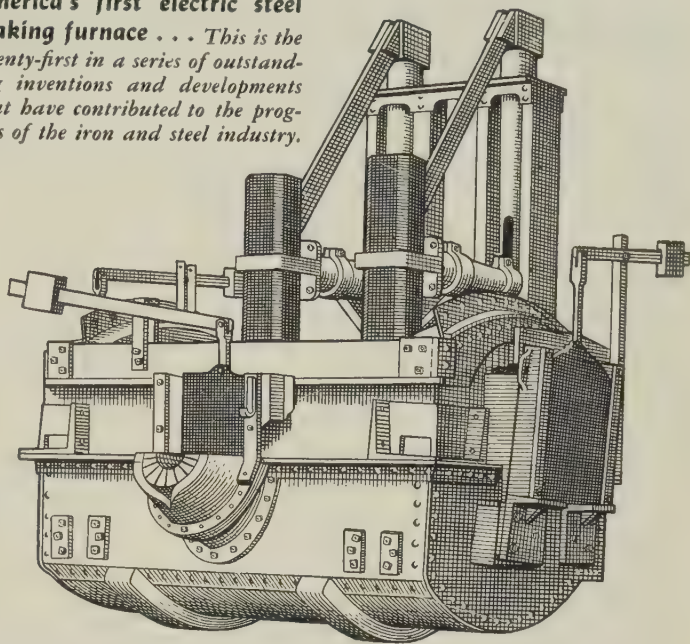


# GREAT MOMENTS IN THE HISTORY OF IRON AND STEEL MAKING



*Dr. Paul Heroult*

*America's first electric steel making furnace . . . This is the twenty-first in a series of outstanding inventions and developments that have contributed to the progress of the iron and steel industry.*



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A century of experimenting was capped with triumph when Paul Heroult perfected an economical and feasible method for producing steel electrically.

By arranging his furnace operation so that a layer of slag always separated the metal and the electrodes, Heroult succeeded in preventing the molten iron from absorbing unmeasured quantities of carbon. This was the solution so tenaciously sought after by the early giants of the industry.

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By its various applications, electric furnace steel must be high quality steel of exact chemical formulation. Scrap of known and carefully tested analysis is a prime ingredient in the manufacture and fabrication of this and other special steels. Our experience, personnel, equipment and strategic location of offices can expedite production problems in this regard. We welcome your inquiry.

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## LEADERS IN IRON AND STEEL SCRAP SINCE 1889



# How the Market Shaped Up

This year has been marked by a slump in demand, falling prices, more production than orders, tighter competition. Profit margins of most producers drop

Nonferrous Metal Prices, Pages 92 & 93

AS 1957 GOES into the record book, producers of nonferrous metals look back on a year marked by five major developments:

1. Production of most metals increased. A few, like nickel, were in oversupply for the first time in years. Production of lead, zinc, and copper was curtailed sporadically throughout the year.

2. Demand declined. Primarily responsible were a general slump in business plus the sharp reduction in customer inventories.

3. Competition tightened. The seller's market changed to a buyer's market.

4. The three factors just named combined to lower the price of many metals.

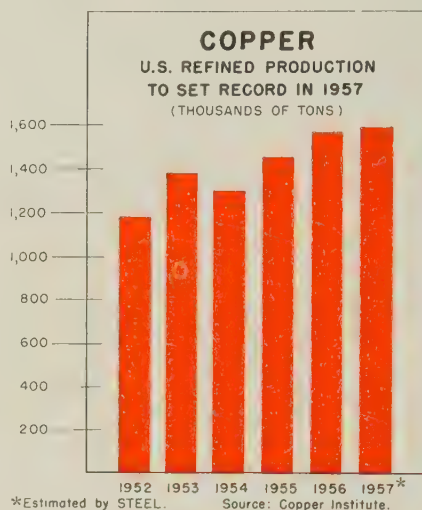
5. Profits dropped, too. Less demand, falling prices, and higher costs all contributed to the decline. Some examples: During the first three quarters, Kennecott Copper Corp. had net profits of \$64,999,680, vs. \$115,978,457 in the same 1956 period. Other third quarter comparisons: Aluminum Co. of America, \$59,562,905, vs. \$69,511,089; International Nickel Co., \$66,047,000, vs. \$72,594,000.

## 1957 Metal Highlights

**Copper** — Primary sold for 36 cents a pound last January. Since then, there have been five price falls. The metal now stands at 27 cents a pound. Custom smelted copper is down to 25.50 cents.

Continued overproduction has been the main reason for the price drops. Demand is only slightly lower in the U. S., and it's up overseas. Free World refined production may reach 3 million tons this year, compared with 2,987,160 tons in 1956. World deliveries to fabricators are pegged at 2,870,000 tons. The 1956 figure was 2,832,978 tons. Domestic refined production

climbed to around 1.6 million tons this year, compared with 1,580,387 tons in 1956 (see chart). Domestic deliveries to fabricators will probably fall from the 1,465,999 tons



registered in 1956 to around 1.3 million tons this year.

**Aluminum**—Power troubles in the Pacific Northwest could pull down 1957's domestic primary production to 1.65 million tons, vs. 1,678,954 tons in 1956. Total domestic availability will also be slightly lower—2.3 million tons, compared with 2,338,954 tons last year, even though secondary production is higher. Probable reason:

The long strike at Aluminium Ltd.'s Arvida facilities sharply curtailed metal from Canada this year.

**Lead, Zinc**—Since Jan. 1, lead has dropped from 16 to 13 cents a pound, zinc from 13.50 to 10 cents a pound. Both metals have been hurt by foreign imports, overproduction, and a slump in demand. In 1957, domestic zinc shipments should total 765,000 tons, compared with 869,270 tons last year. Production will be close to the 1956 figure of 1,062,954 tons.

Total U. S. lead supply in 1957 is pegged at 1,285,000 tons, slightly under the 1956 figure of 1,374,000 tons. Consumption this year should hit 1,125,000 tons, compared with last year's 1,210,000 tons.

**Titanium**—Output will hit around 5600 tons, the highest in history. But 3828 tons were produced in the first half—since then, shipments have slipped badly. Reason: Cutbacks and stretchouts in defense orders. Prices were chopped across the board during 1957. One example: The price of Grade A-1 sponge was reduced from \$2.75 to \$2.25 a pound.

**Magnesium**—Production at 80,000 tons is substantially over the 1956 total of 68,346 tons. Consumption is expected to fall to 47,000 tons (about 6500 tons under last year's figure).

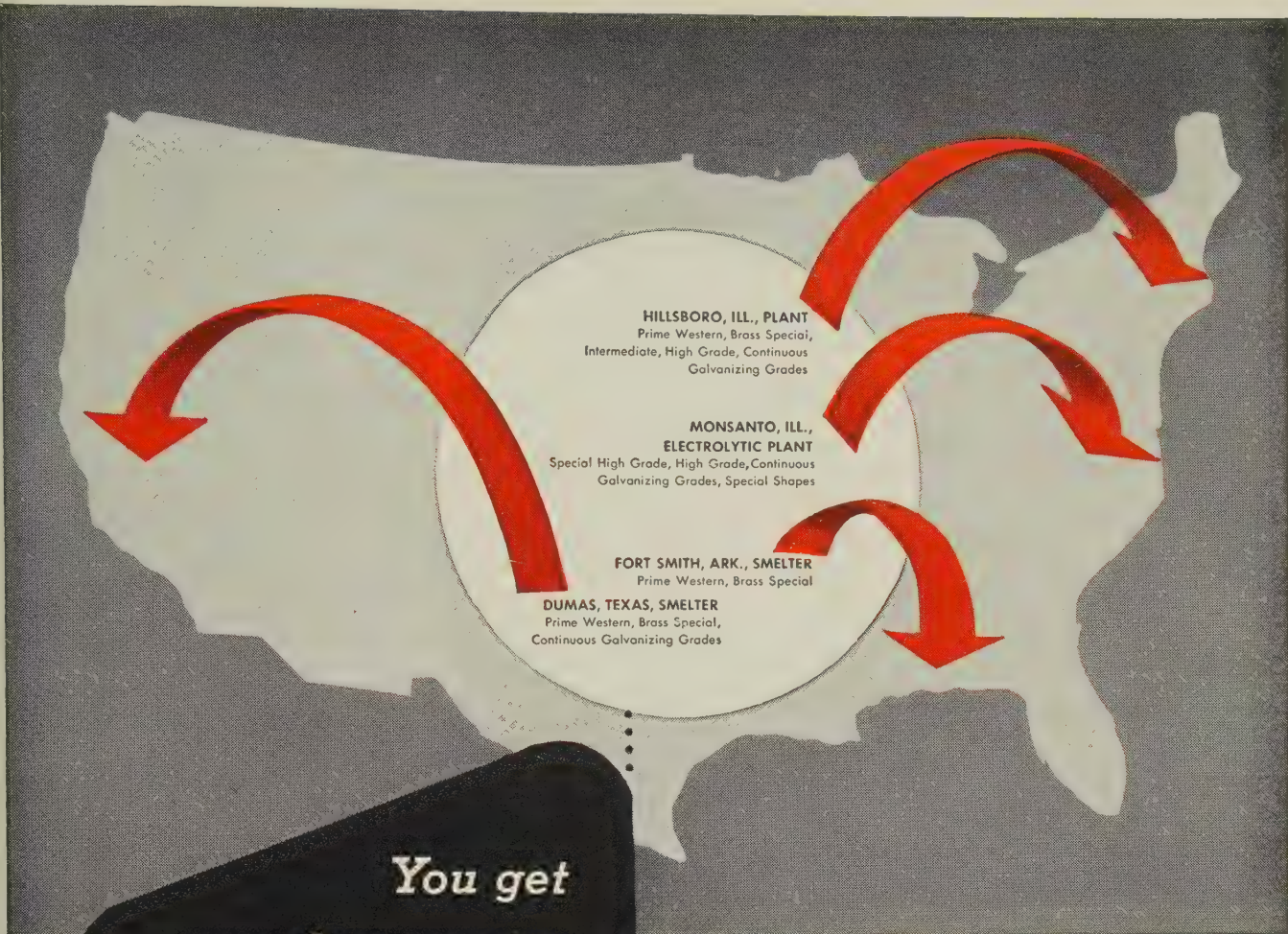
**Nickel**—The white metal is in oversupply for the first time since pre-Korean War days. Free World production this year will reach 244,000 tons, compared with 231,000 tons in 1956. Consumption is down: The U. S. will use 125,000 tons this year, compared with 127,578 tons in 1956.

## NONFERROUS PRICE RECORD

	Price Dec. 23	Last Change	Previous Price	Nov. Avg	Oct. Avg	Dec., 1956 Avg
Aluminum ..	26.00	Aug. 1, 1957	25.00	26.000	26.000	25.000
Copper .....	25.50-27.00	Dec. 16, 1957	25.00-27.00	26.217	26.361	35.650
Lead .....	12.80	Dec. 2, 1957	13.30	13.300	13.504	15.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel .....	74.00	Dec. 6, 1956	64.50	74.000	74.000	64.500
Tin .....	92.50	Dec. 23, 1957	92.375	89.288	91.843	105.067
Zinc .....	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.





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**AMERICAN ZINC, LEAD & SMELTING COMPANY**  
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# Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

## PRIMARY METALS AND ALLOYS

**Aluminum:** 99.5%, pigs, 26.00; ingots, 28.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

**Aluminum Alloy:** No. 13, 29.90; No. 43, 29.70; No. 195, 31.30; No. 241, 31.50; No. 356, 29.90, 30-lb ingots.

**Antimony:** R.M.M. brand, 99.5%, 33.00; Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 25.50-26.50, New York, duty paid, 10,000 lb or more.

**Beryllium:** 97% lump or beads, \$71.50 per lb, f.o.b. Cleveland or Reading, Pa.

**Beryllium Aluminum:** 5% Be, \$74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

**Beryllium Copper:** 3.75-4.25% Be, \$43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

**Bismuth:** \$2.25 per ton, ton lots.

**Cadmium:** Sticks and bars, \$1.70 per lb deld.

**Cobalt:** 97-99%, \$2.00 per lb for 550-lb keg; \$2.02 per lb for 100 lb case; \$2.07 per lb under 100 lb.

**Columbium:** Powder, \$120 per lb, nom.

**Copper:** Electrolytic, 27.00 deld.; custom smelters, 25.50; lake, 27.00 deld.; fire refined, 26.75 deld.

**Germanium:** First reduction, \$179.17-197.31 per lb; intrinsic grade, \$197.31-220 per lb, depending on quantity.

**Gold:** U. S. Treasury, \$35 per oz.

**Indium:** 99.9%, \$2.25 per troy oz.

**Iridium:** \$80-110 nom. per troy oz.

**Lead:** Common, 12.80; chemical, 12.90; cor-rodng, 12.90, St. Louis. New York basis, add 0.20.

**Lithium:** 98 + %, 50-100 lb, cups or ingots, \$12; rod, \$15; shot or wire, \$16. 100-500 lb, cups or ingots, \$10.50; rod, \$14; shot or wire, \$15, f.o.b. Minneapolis.

**Magnesium:** Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

**Magnesium Alloys:** AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

**Mercury:** Open market, spot, New York, \$223-230 per 76-lb flask.

**Molybdenum:** Unalloyed, turned extrusions, 3.75-5.75 in. round, \$9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

**Nickel:** Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "P" nickel shot for addition to cast iron, 74.50; "F" nickel 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

**Osmium:** \$80-100 per troy oz. nom.

**Palladium:** \$21-24 per troy oz.

**Platinum:** \$77-80 per troy oz from refineries.

**Radium:** \$16-21.50 per mg radium content, depending on quantity.

**Rhodium:** \$118-125 per troy oz.

**Ruthenium:** \$45-55 per troy oz.

**Selenium:** \$7.50 per lb, commercial grade.

**Silver:** Open market, 89.625 per troy oz.

**Sodium:** 16.50, c.l.; 17.00 l.c.l.

**Tantalum:** Rod, \$60 per lb; sheet, \$55 per lb.

**Tellurium:** \$1.65-1.85 per lb.

**Thallium:** \$7.50 per lb.

**Tin:** Straits, N. Y., spot and prompt, 92.50.

**Titanium:** Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), \$2.25; grade A-2 (0.5% Fe max.), \$2.00 per lb.

**Tungsten:** Powder, 98.8%, carbon reduced, 1000-lb lots, \$3.50 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+ % hydrogen reduced, \$4.10-4.20.

**Zinc:** Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Die casting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld. **Zirconium:** Sponge, commercial grade, \$5.10 per lb.

(Note: Chromium, manganese, and silicon met-als are listed in ferroalloy section.)

## SECONDARY METALS AND ALLOYS

**Aluminum Ingot:** Piston alloys, 24.00-25.50; No. 12 foundry alloy (No. 2 grade), 22.00-23.25; 5% silicon alloy, 0.60 Cu max., 25.75-26.25; 13 alloy, 0.60 Cu max., 25.75-26.25; 195 alloy, 25.00-27.00; 108 alloy, 22.50-23.25. Steel deoxidizing grades, notch bars, granu-lated or shot; Grade 1, 24.00; grade 2, 22.25; grade 3, 21.00; grade 4, 19.00.

**Brass Ingot:** Red brass, No. 115, 27.25; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

**Magnesium Alloy Ingot:** AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

## NONFERROUS PRODUCTS

### BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, \$1.82, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, \$1.80, f.o.b. Temple, Pa.

### COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 32.355; l.c.l., 32.98. Weatherproof, 30,000-lb lots, 33.66; l.c.l., 34.78. Magnet wire deld., 40.43, before quantity discounts.

### LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, \$18.50 per cwt; pipe, full coils, \$18.50 per cwt; traps and bends, list prices plus 30%.

### TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets and strip, \$9.50-15.95; sheared mill plate, \$8.00-11.50; wire, \$7.50-11.50; forging billets, \$6.00-7.60; hot-rolled and forged bars, \$6.15-7.90.

### ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates 19.00

### ZIRCONIUM

Plate, \$12.50-19.20; H.R. strip, \$12.50-22.90; C.R. strip, \$15.00-31.25; forged or H.R. bars, \$11.00-17.40.

### NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R. ....	126	106	128
Strips, C.R. ....	124	108	138
Plate, H.R. ....	120	105	121
Rod, Shapes, H.R. .	107	89	109
Seamless Tubes ...	157	129	200

### ALUMINUM

Sheets: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness	Range Inches	Flat Sheet	Coiled Sheet
	0.249-0.136	43.10-47.60	.....
	0.135-0.096	43.60-48.70	40.50-41.10
	0.095-0.077	44.30-50.50	40.60-41.30
	0.076-0.061	44.90-52.80	40.80-42.00
	0.060-0.048	45.60-55.10	41.40-43.10
	0.047-0.038	46.20-57.90	41.90-44.50
	0.037-0.030	46.60-62.90	42.30-46.30
	0.029-0.024	47.20-54.70	42.60-47.00
	0.023-0.019	48.20-58.10	43.70-45.40
	0.018-0.017	49.00-55.40	44.30-46.00
	0.016-0.015	49.90-56.30	45.10-46.80
	0.014	50.90	46.10-47.80
	0.013-0.012	52.10	46.80
	0.011	53.10	48.00
	0.010-0.0095	54.60	49.40
	0.009-0.0085	55.90	50.90
	0.008-0.0075	57.50	52.10
	0.007	59.00	53.60
	0.006	60.60	55.00

## BRASS MILL PRICES

### MILL PRODUCTS a

	Sheet, Strip, Plate	Rod	Wire
Copper .....	50.13b	47.36c	.....
Yellow Brass .....	44.02	32.30d	44.56
Low Brass, 80% .....	46.50	46.44	47.04
Red Brass, 85% .....	47.37	47.31	47.91
Com. Bronze, 90% .....	48.78	48.72	49.32
Manganese Bronze .....	52.01	46.01	56.61
Muntz Metal .....	46.39	42.20	.....
Naval Brass .....	48.27	42.58	55.33
Silicon Bronze .....	54.76	53.95	54.80
Nickel Silver, 10% .....	60.43	62.75	66.74e
Phos. Bronze, A-5% ...	69.07	69.57	70.75

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold--drawn. d. Free cutting. e. 3% silicon. f. prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

## ALUMINUM (continued)

**Plates and Circles:** Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F ....	42.70	47.50
5050-F .....	43.80	48.60
3004-F .....	44.80	50.50
5052-F .....	44.40	51.20
6061-T6 .....	46.90	53.00
2024-T4 .....	50.60	57.40
7075-T6* .....	58.40	66.00

\*24-48 in. width or diam., 72-180 in. lengths.

**Screw Machine Stock:** 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
<b>Drawn</b>				
0.125	78.20	75.20	.....	.....
0.156-0.172	66.20	63.40	.....	.....
0.188	66.20	63.40	.....	81.60
0.219-0.234	63.00	61.50	.....	.....
0.250-0.281	63.00	61.50	.....	77.90
0.313	63.00	61.50	.....	74.20
0.344	62.50	.....	.....	.....

### Cold-Finished

0.375-0.547	62.50	61.30	74.80	69.80
0.563-0.688	62.50	61.30	71.10	65.50
0.719-1.000	61.00	59.70	64.90	61.70
1.063	61.00	59.70	.....	59.60
1.125-1.500	58.60	57.40	62.80	59.60

### Rolled

1.563	57.00	55.70	.....	.....
1.625-2.000	56.30	54.90	.....	57.50
2.125-2.500	54.80	53.40	.....	.....
2.563-3.375	53.20	51.70	.....	.....

**Forging Stock:** Round, Class 1, 45.20-58.60 in specific lengths, 36-144 in, diam. 0.375-8 in. Rectangles and squares, Class 1, 50.50-66.60 in random lengths, 0.375-4 in. thick width 0.750-10 in.

**Pipe:** ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)	Nom. Pipe Size (in.)		
%	\$19.40	2	\$ 59.90
1	30.50	4	165.05
1 1/4	41.30	6	296.10
1 1/2	49.40	8	445.55

### Extruded Solid Shapes:

	Alloy	Alloy
<b>Factor</b>	6063-T5	6062-T6
9-11	45.40-47.00	60.60-64.80
12-14	45.70-47.20	61.30-65.80
15-17	45.90-47.90	62.50-67.50
18-20	46.50-48.30	64.50-70.10

### MAGNESIUM

**Sheet and Plate:** AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

### Extruded Solid Shapes:

	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
<b>Factor</b>		
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
38-38	89.20-90.30	104.20-105.30

## NONFERROUS SCRAP

### DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.) **Aluminum:** 1100 clippings, 13.50-14.00; old sheets, 10.50-11.00; borings and turnings, 6.50-



7.00; crankcases, 10.50-11.00; industrial castings, 10.50-11.00.

**Copper and Brass:** No. 1 heavy copper and wire, 18.50-19.00; No. 2 heavy copper and wire, 16.50-17.00; light copper, 14.50-15.00; No. 1 composition red brass, 15.50-16.00; No. 1 composition turnings, 15.00-15.50; new brass clippings, 13.00-13.50; light brass, 9.50-10.00; heavy yellow brass, 11.50-12.00; new brass rod ends, 12.00-12.50; auto radiators, unsweated, 12.00-12.50; cocks and faucets, 12.50-13.00; brass pipe, 12.50-13.00.

**Lead:** Heavy, 8.50-8.75; battery plates, 3.50-3.75; linotype and stereotype, 10.25-10.75; electrolyte, 9.25-9.75; mixed babbitt, 10.50-11.00.

**Monel:** Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods 28.00-29.00.

**Nickel:** Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

**Zinc:** Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

#### REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

**Aluminum:** 1100 clippings, 16.50-17.50; 3003 clippings, 16.50-17.50; 6151 clippings, 16.00-17.50; 5052 clippings, 16.00-17.00; 2014 clippings, 15.50-17.00; 2017 clippings, 15.50-17.00; 2024 clippings, 15.50-17.00; mixed clippings, 15.00-16.00; old sheets, 13.50; old cast, 13.50; clean old cable (free of steel), 16.00-16.50; borings and turnings, 13.50-15.00.

**Beryllium Copper:** Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 53.00; light scrap, 48.00; turnings and borings, 33.00.

**Copper and Brass:** No. 1 heavy copper and wire, 21.25; No. 2 heavy copper and wire, 19.25; light copper, 17.00; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.00; yellow brass turnings, 12.00; radiators, 15.00.

#### INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

**Copper and Brass:** No. 1 heavy copper and wire, 21.25; No. 2 heavy copper and wire, 19.25; light copper, 17.00; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.00; yellow brass turnings, 12.00; radiators, 15.00.

#### PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

##### ANODES

**Cadmium:** Special or patented shapes, \$1.70 per lb.

**Copper:** Flat-rolled, 43.79; oval, 42.00, 5000-10,000 lb; electrodeposited, 35.75, 2000-5000 lb lots; cast, 36.25, 5000-10,000 lb quantities.

**Nickel:** Depolarized, less than 100 lb, 114.25; 10-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

**Tin:** Bar or slab, less than 200 lb, 111.50; 200-499 lb, 110.00; 500-999 lb, 109.50; 1000 lb or more, 109.00.

**Zinc:** Balls, 17.50; flat tops, 17.50; flats, 19.25; ovals, 18.50, ton lots.

##### CHEMICALS

**Cadmium Oxide:** \$1.70 per lb in 100-lb drums.

**Chromic Acid:** 100 lb, 33.30; 500 lb, 32.80; 2000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

**Copper Cyanide:** 100-200 lb, 71.60; 300-900 lb, 69.60.

**Copper Sulphate:** 100-1900 lb, 14.55; 2000-5900 lb, 12.55; 6000-11,900 lb, 12.30; 12,000-22,900 lb, 12.05; 23,000 lb or more, 11.55.

**Nickel Chloride:** Less than 400 lb, 35.00; 400-9999 lb, 33.00; 10,000 lb, 32.50.

**Nickel Sulphate:** 5000-22,000 lb, 33.50; 23,000-35,900 lb, 33.00; 36,000 lb or more, 32.50.

**Sodium Cyanide:** 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

**Sodium Stannate:** Less than 100 lb, 74.70; 100-600 lb, 65.80; 700-1900 lb, 63.00; 200-9900 lb, 61.20; 10,000 lb or more, 59.80.

**Stannous Chloride (anhydrous):** Less than 25 lb, 164.10; 25 lb, 129.10; 100 lb, 114.10; 400 lb, 111.60; 5200-19,600 lb, 99.40; 20,000 lb or more, 87.20.

**Stannous Sulphate:** Less than 50 lb, 126.90; 50 lb, 96.90; 100-1900 lb, 94.90; 2000 lb or more, 92.90.

**Zinc Cyanide:** 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 87)

with comparatively thin order books. Prompt shipments will tend to encourage minimum consumer inventories through the first half of 1958.

Sheetmakers are looking to the automotive industry to spark something of an upturn early next year. But their hopes have been dampened recently by rumors that projected first quarter auto schedules may be cut. It appears that first quarter demand will depend to a large extent on how auto sales go. They have been faltering lately.

#### Wire . . .

Wire Prices, Pages 83 & 84

Wire bookings for January point to an increase of about 10 per cent over December, which was the low month of 1957. Volume will approximate November's tonnage.

Buying of industrial wire products is well spread out, including manufacturers' and heading stock. Merchant products are inactive seasonally, but a noticeable pickup in demand the last couple of weeks is reported at Chicago. Jobbers appear to be starting to rebuild depleted inventories.

One Chicago area wiremaker says that during December at least 80 per cent of its orders were placed by telephone. Users appear to have been ordering only as they needed material, and they continue to seek fast deliveries. That means good working stocks of wire products must be maintained by the mills.

#### Plates . . .

Plate Prices, Page 81

Fabricating shops are buying closer to requirements. They are not building inventories. The ease in pressure on plate mills for heavy sheared plates continues. There have been some shipment deferments of shipyard tonnage, but prospects from this market in the first half of 1958 are encouraging.

Requirements for tanks, weldments, pressure vessels, and general plate fabricating are declining. Mills are off allocation and are soliciting tonnage. While some producers' schedules will be filled

for January, backlogs at eastern Pennsylvania mills vary considerably. Those that were slow to eliminate premium prices have thin order books.

The Navy is closing on 150 tons, flange work, for Philadelphia. Eastern Stainless Steel Co. has been awarded substantial lots of stainless plates.

Colorado Fuel & Iron Corp. announced last week it was booking orders for Clay-Loy, high strength steel plates—they're used widely in the construction industry, in bridge and dam building, and in excavating and marine equipment. The plates are produced at the company's Claymont, Del., plant.

#### Steel Bars . . .

Bar Prices, Page 81

Yearend inventory liquidations cut December sales of hot-rolled and cold-drawn bars. Demand for both is slack. Users show no inclination to bolster their inventories. Cold-drawn bar suppliers doubt their sales will improve in January, and short order back-

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2" to 2½" Diameter x .060 to .125  
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Hot or Cold Rolled

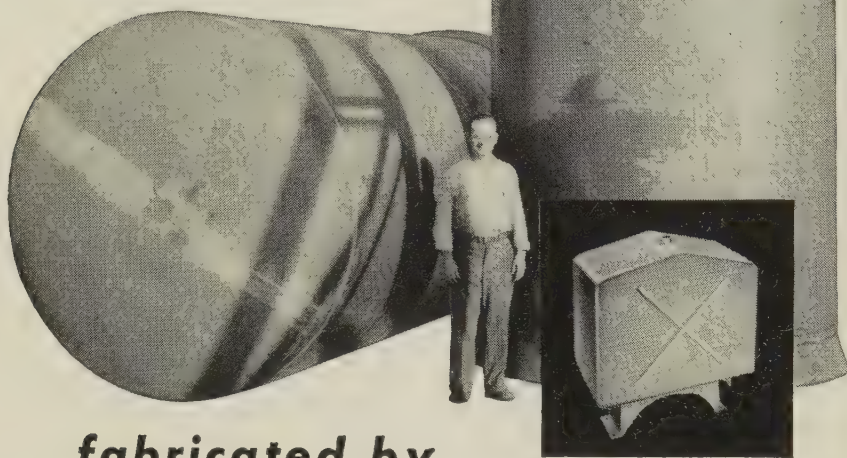
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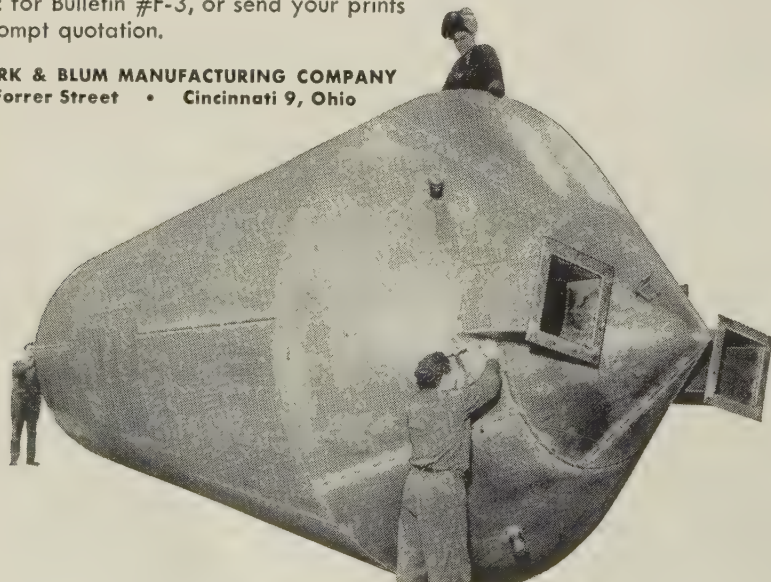
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logs prevent them from making predictions about February sales.

A major hot-rolled barmaker has a more optimistic prediction. The firm looks for a "modest gain" next month. It thinks sales hit a low point in December. Based on incoming orders for January, it should surpass December, although selling will remain highly competitive.

## Stainless Steel . . .

Stainless Steel Prices, Page 85

Sales declines in stainless steel leveled off in early December, but in the last half of the month, orders fell again. Producers at Pittsburgh point to "bright spots" in sales of plates to manufacturers of heavy industrial equipment. Demand from this source increased in December. Also firm are sales of plate for defense work, including atomic applications.

Sales are off in such "bread and butter" items as sheets. Purchases from warehouses are slow. They are reportedly cutting inventories of stainless due to slack sales. Orders are small from automakers. There is no immediate prospect of an upswing in demand.

## Structural Shapes . . .

Structural Shape Prices, Page 81

Speaking at the eighth annual Main Highway Conference at the University of Maine, L. Abbot Post, executive vice president, American Institute of Steel Construction, said structural steel is now readily available for the entire construction industry.

Output of heavy shapes this year will be 25 per cent above the 1956 level to set a record of 6.7 million tons, he said. It represents an increase of nearly 1.5 million tons in a little more than a year. By 1959 there will be an additional 10 million tons available annually as the producing mills continue to expand facilities.

## STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4900 tons 2150-ft superstructure, suspension bridge, Ogdensburg Bridge project, St. Lawrence, N. Y.-Grenville, Ont., to the American Bridge Div., U. S. Steel Corp., Pittsburgh.  
1500 tons, addition, fabricating plant, Kaiser Steel Corp., Napa, Calif., to the Soule Steel Co., San Francisco.  
1980 tons, Edison Building, Southwest Bell Telephone Co., Ft. Worth, Tex., to the Mosher Steel Co., Dallas; Henger Construction Co., Dallas, general contractor.



600 tons, state highway structures, Orange-Wendell, Mass., to the A. O. Wilson Structural Co., Cambridge, Mass.; Bayer & Mingolla Construction Co., Worcester, Mass., general contractor.

600 tons, transit shed, pier 10, New York Port Authority, Brooklyn, N. Y., to the Central Structural Steel Co., New York; bids direct, Dec. 10.

597 tons, regional high school, Northboro, Mass., to the Haarmann Steel Co., Holyoke, Mass. (462 tons, structurals) and Bethlehem Steel Co., Bethlehem, Pa. (135 tons, bar joists); Daniel O'Connell's Sons Inc., Holyoke, Mass., general contractor; reinforcing bars, Northern Steel Inc., Medford, Mass.

510 tons, three state bridges, including one 110-ft welded composite girder, two-span composite WF and one span 121-ft through plate girder, West Rutland-Rutland, Vt., to the Phoenix Bridge Co., Phoenixville, Pa.; E. T. O'Neill & Son Construction Corp., Holyoke, Mass., general contractor.

210 tons, state highway bridges, Hopkinton, N. H., to the Lyons Iron Works, Manchester, N. H.; Suburban Excavators Inc., Malden, Mass., general contractor.

170 tons, Coleman Hall, Bucknell University, Lewisburg, Pa., to the Milton Steel & Supply Co., Milton, Pa.; Ritter Bros. Inc., Harrisburg, Pa., general contractor.

170 tons, Spanaway High School, to United Iron Works Inc., Seattle; Northern Construction Co., Tacoma, Wash., general contractor.

115 tons, state bridge, Crooked River, Casco-Naples, Me., to the Bancroft & Martin Rolling Mills Co., South Portland, Me.; Callahan Bros. Inc., Mechanic Falls, Maine, general contractor.

110 tons, boiler supports, Philadelphia Electric Co., New York.

#### STRUCTURAL STEEL PENDING

500 tons, airport terminal building, Hillsgrove, R. I.; Manni Construction Co., Johnston, R. I., low on general contract.

275 tons, three-span bridge, Farmington River, New Hartford-Canton, Conn.; Oneglia & Gervasini Inc., Torrington, Conn., low on general contract; also 120 tons, reinforcing bars.

150 tons, Geryhound Bus Terminal, Tacoma, Wash.; Dolph Jones, Tacoma, Wash., apparently low on the general contract at \$665,000.

### REINFORCING BARS . . .

#### REINFORCING BARS PLACED

600 tons, Edison Building, Southwest Bell Telephone Co., Ft. Worth, Tex., to the Southern States Steel Co., Dallas; Henger Construction Co., Dallas, is general contractor.

160 tons, five-span composite girder bridge, Farmington River, Farmington, Conn., to the Scherer Steel Co., Hartford, Conn.; Oneglia & Gervasini Co., Torrington, Conn., general contractor.

100 tons, three bridge structures, West Rutland-Rutland, Vt., to the Bethlehem Steel Co., Bethlehem, Pa.; E. T. O'Neill & Son Construction Corp., Holyoke, Mass., general contractor.

#### REINFORCING BARS PENDING

1800 tons, Norton Building, Seattle; general contract to Howard S. Wright & Co. Inc., Seattle.

350 tons, also piling, and lump sum for shapes, Washington State truss bridge, Snohomish County; bids to Olympia, Dec. 31.

225 tons, two Washington State highway projects, Thurston County; bids to Olympia, Wash., Dec. 31.

### PLATES . . .

#### PLATES PLACED

175 tons, General Stores Supply, Navy, Philadelphia, to the Alan Wood Steel Co., Conshohocken, Pa.

### RAILS, CARS . . .

#### RAILROAD CARS PLACED

Louisville & Nashville, 475 boxcars, including 225 forty-ft with roller bearings, nailable steel floors, and 250 with friction bearings, wood floors, to the Pullman-Standard Car Mfg. Co., Chicago.

## Advertising Index

Acme Chain Corporation	16
American Zinc, Lead & Smelting Co.	91
American Zinc Sales Co.	91
Armstrong-Blum Mfg. Co.	21
Associated Spring Corporation	11

Barnes-Gibson-Raymond, Division of Associated Spring Corporation	11
Barnes, Wallace, Co., Division of Associated Spring Corporation	11
Barnes, Wallace, Co., The, Ltd., Division of Associated Spring Corporation	11
Barnes, Wallace, Steel Division, Associated Spring Corporation	11
Bethlehem Steel Co.	1
Bigelow-Liptak Corporation	75

Chicago Rawhide Manufacturing Co., Sirvis Division	33
Colorado Fuel & Iron Corporation, The	51

Detrex Chemical Industries, Inc.	12
Dunbar Brothers Co., Division of Associated Spring Corporation	11

Exide Industrial Division, The Electric Storage Battery Co.	17
---	----

Fenn Manufacturing Co., The	70
-----------------------------	----

Gibson, William D., Co., The, Division of Associated Spring Corporation	11
Goodrich, B. F., Industrial Products Co.	7

Heald Machine Co., The	Inside Front Cover
------------------------	--------------------

Inland Steel Co.	24
International Nickel Co., Inc., The	22

Keystone Lamp Manufacturing Corporation	93
Kirk & Blum Manufacturing Co., The	94

Luria Brothers & Co., Inc.	89
----------------------------	----

Mesta Machine Co.	63
Manross, F. N., & Sons Co., Division of Associated Spring Corporation	11
Master Electric Co., The	49
Milwaukee Division of Associated Spring Corporation	11

Noble Co.	4
Norfolk & Western Railway	38

Ohio Division of Associated Spring Corporation	11
--	----

Philadelphia Gear Works, Inc.	13
Progressive Mfg. Co., The, Division of The Torrington Co.	76

Raymond Manufacturing Co., Division of Associated Spring Corporation	11
Republic Steel Corporation	8, 9
Russell, Burdall & Ward Bolt & Nut Co.	42
Ryerson, Joseph T., & Son, Inc.	18

Seaboard Pacific Division, Associated Spring Corporation	11
Somers Brass Co., Inc.	45
Standard Oil Co. (Indiana)	2, 3
Stevens, Frederic B., Inc.	10

Teiner, Roland, Co., Inc.	44
Timken Roller Bearing Co., The	Back Cover
Torrington Co., The, The Progressive Mfg. Co. Division	76

United States Rubber Co., Mechanical Goods Division	41
---	----

Virginia Gear & Machine Corporation	13
-------------------------------------	----

Ward Steel Co.	95
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation	51
Wiggins, John B., Co., The	74
Wilson, Lee, Engineering Co., Inc.	Inside Back Cover
Wyman-Gordon Co.	54

Yoder Co., The	6
----------------	---

Table of Contents, Page 5

Classified Advertising, Page 93

# WARD STEEL CO.

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**STEEL**  
**EDITORIAL INDEX**

for

**VOLUME 141**

July 1 to December 31, 1957

Subject Index . . . . 2

Company Index . . . . 13

Author Index . . . . 23

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Penton Building, Cleveland 13, Ohio



# SUBJECT INDEX

## A

### Abrasives:

Abrasive blast cleans weldments, 12/23, p.78  
Barrel finishing uses alkaline abrasive compound and granite, 9/9, p.105  
Factors in choosing an abrasive for shot peening, 7/29, p.111  
Liquid abrasive gun (wet blast) microscopic peening, 12/16, p.106

### Accidents:

Disabling frequency rate, AISI report, 8/12, p.79  
Industrial injury rate, 7/8, p.43

### Adhesives:

Adhesive markets multiply, 10/28, p.122  
Adhesive (new) holds 5000 psi, 11/11, p.128  
Ceramic adhesive, TO, 9/23, p.117  
Stainless steel bond, TO, 9/9, p.103

### Air Compressor Research Council:

Elects president, 12/2, p.88

### Air Conditioning:

Chart: The next ten years in shipments, 12/2, p.56  
Air conditioning sales, 7/8, p.64; 12/9, p.236; 12/30, p.19  
SBA survey, plants using, 7/8, p.47  
Heat pumps, southern sales, 7/29, p.72

### Air Pollution: See Smoke, Smog

### Aircraft:

Aerial sedan forecast, one-man helicopter, 7/29, p.72  
Air Force officer predicts tomorrow's metals, 10/14, p.138  
Aluminum-lithium, new jet alloy, 10/7, p.125  
Armco's PH 15-7 Mo: New steel for hot aircraft, 9/23, p.138  
Brazing for high temperature use, jet engine assemblies, 8/26, p.82  
Chem-milling aircraft parts, 12/2, p.114  
Computer flies jet, TO, 12/16, p.101  
Double contour panels spotted welded automatically, 7/15, p.118  
Film base checks large parts accuracy (wing panels), 7/15, p.110  
Flying saucers explained, 11/18, p.116  
Fuel, high energy, 7/15, p.56  
Fuel, chemical for bomber, 11/4, p.60  
Fuel, metallic chemicals, 9/2, p.92  
Gaging unit (12-ft) inspects jet engine parts, 9/16, p.155  
Hydraulic testing system checks tail frame, 8/19, p.180  
Lockheed production tech. for supersonic Starfighter, 12/2, p.100  
Nuclear aircraft coming, 10/14, p.69  
Springs, markets, 11/25, p.62  
Vacuum drill assembly rivets holes in aircraft skins, 11/18, p.178

### Aircraft Castings Assn.:

Formed, B, 8/5, p.84

### Aircraft Industries Assn. Inc.:

Aircraft exports, 8/26, p.39  
Estimate missile dollars, 12/30, p.32  
Tape control shines in test, 9/23, p.140

### Air Force:

Aircraft-to-missiles: What it means in procurement and to contractors, 7/1, p.38  
Aircraft cutbacks, effect on industry, 7/22, p.51; 7/29, p.65  
Chemical bomber, 12/23, p.42  
Heavy presses cut forging costs (landing gear parts), 9/9, p.118  
See Defense Contracts

### Air Moving & Conditioning Assn. Inc.:

Elects, B, 10/21, p.74; 12/23, p.63

### Alloy Casting Institute:

Elects, B, 7/15, p.89

### Alloys:

1957 metal selector, 10/28, p.169  
AISI standards weeds out H-steels, 10/14, p.181  
Alloy steel solves warping problem (pallets), 7/29, p.139  
Aluminum-lithium, new jet alloy, 10/7, p.125  
Aluminum-moly titanium alloy, 7/29, p.135  
Armco's PH 15-7 Mo: New steel for hot aircraft, 9/23, p.138  
Atomic use:  
A new stainless (clad boron), 9/9, p.104  
Beryllium takes new step, 8/10, p.152  
Bearing alloy, TO, 12/23, p.65  
Boralloy new, deep casting hardness, 10/21, p.83  
Brazing alloy selector, 10/7, p.162  
Brazing alloys, 7/22, p.103  
Brazing rules, 7/8, p.102  
Brazing jet assemblies for high temp. use, 8/26, p.82  
Columbium for jet engines, 12/2, p.93  
Hard-facing alloy used on sintering pug mill rotor blades, 7/1, p.72  
Vacuum melted alloys, producers (chart), 7/22, p.137

### Aluminum:

1958 shipments: Aluminum growth hits snag, 12/30, p.78  
1975: Aluminum looks ahead (chart): Consumption, new facilities, 8/19, p.107  
1975 consumption outlook, 12/16, p.54  
Aluminum diecastings — reasons for growth (production ideas), 8/5, p.89  
Aluminum fabricators enlarge facilities, 8/12, p.101  
Aluminum foam, rigid core material, 7/15, p.120  
Aluminum-lithium aircraft alloy, 10/7, p.125  
Anodized aluminum trim, autos and appliances, 12/30, p.65  
Auto use:  
1958 cars, Kaiser survey, 11/10, p.124  
Aluminum dream cars (Kaiser), 8/5, p.70  
All-aluminum outlook, 7/8, p.67  
Aluminizing valves, 9/23, p.117  
Rifle, alum. barrel, 12/2, p.93

### Aluminum Window Manufacturers Assn.:

New offices, B, 7/15, p.89

### American Arbitration Assn.:

Trend in arbitration, survey, 7/22, p.60

### American Die Casting Institute:

Chicago meeting, 9/23, p.82  
Elects, 9/30, p.74

### American Foundrymen's Society:

Job training for line supervisors, 7/29, p.107

### American Gas Association:

Elects, B, 10/14, p.96

### American Home Laundry Manufacturers' Assn.:

Job rating survey, 10/28, p.121

### American Institute of Mining, Metallurgical & Petroleum Engineers Inc.:

Elects, B, 7/29, p.107; 12/23, p.63

### American Institute of Steel Construction Inc.:

Elects, B, 10/28, p.158

### American Iron & Steel Institute:

Alloys, H-steels withdrawn, 10/14, p.181  
Average age of steelworkers, 12/2, p.55  
Asks building code change, 10/14, p.67  
Color code for steel, 7/29, p.82  
Disabling injury rate, 8/12, p.79  
Electric power, consumption, 8/12, p.76

Iron ore stocks, consumption, 11/11, p.175  
West Coast meeting, steel production report, 11/18, p.113

### American Machine Tool Distributors' Assn.:

Elect, 10/7, p.168

### American Management Assn.:

Academy for Advanced Management, 10/7, p.124  
Committees, corporate use (survey), 11/4, p.60  
Dr. Clague predicts economy, 10/7, p.124  
Operations research gains, 12/9, p.118  
Salesmen's income, 8/12, p.79  
Salary levels, 11/4, p.60

### American Metal Repair Assn.:

Organized, 11/25, p.88

### American Nuclear Power Associates:

Organized, 11/25, p.88

### American Production & Inventory Control Society:

Formed, B, 11/18, p.142

### American Rocket Society:

Asks federal space agency, predicts trip to moon by '77, 12/10, p.62

### American Society for Metals:

Handbook editors, 8/26, p.64  
Metal Show seminar, 10/28, p.195  
Researchers develop better metals, Eisenman report, 12/30, p.52

### American Society of Industrial Designers:

Elects, B, 10/28, p.158

### American Steel Warehouse Assn.:

Distribution cost analysis, 10/21, p.48  
Doxsey aids Chilean group, 12/2, p.55  
Elects, B, 7/8, p.91

### American Welding Society:

Plummer secy, 7/1, p.62

### Amortization:

Bulletin F overhaul, 8/12, p.136  
Fast tax will end, 8/12, p.80  
ODM writeoffs, 7/8, p.63; 7/22, p.58; 7/29, p.75  
Rev. Hogan (Fordham) pleads for tax depreciation reform before AISI, 10/28, p.129

### Anodizing:

Firestone Steel Products:  
Anodized alum. auto trim, 9/9, p.69  
One machine anodizes many colors, 12/30, p.65  
Anodizing racks, titanium-tipped (GE), 9/23, p.83

### Anti-Friction Bearing Manufacturers Assn.:

Elects, B, 8/12, p.104

### Antitrust: See Government

### Appliances:

1958 goal: Suppliers outlook mixed, 9/9, p.63  
1967: The next ten years in appliances (chart), 12/2, p.56  
Frigidaire cabinets in 38 seconds, 8/19, p.194  
Laundry appliance sales, 12/30, p.19  
Steel kitchens, industry report, 5/20, p.98

### Appraisal Counseling: See Management

### Apprentices:

Training lags, 12/16, p.53

### Arbitration: See Labor

### Area Development:

Chicago projects, 7/15, p.57; costs, 8/26, p.41

Hotpoint teams with Texas construction firm for Illinois community, 8/5, p.49

### Artile:

Mineral search, 3-year exploration financed, 9/2, p.82

### Armour Research Foundation:

See Illinois Institute of Tech.

### Arsenals:

Watervliet: Thread grinder sold size problem, 7/29, p.116

### Associated Industries of Cleveland:

Average hourly wage increase, 9/30, p.39; yearly comparison, 11/18, p.103; 1958 boosts? 12/2, p.53  
Fringe benefits: Average hourly cost per employee, 12/2, p.54  
Holiday schedules, 12/23, p.36

### Association Of Iron & Steel Engineers:

Rev. Hogan (Fordham), pleads for tax depreciation reform, 10/28, p.129  
Convention, papers, 10/14, p.1

### Association of Missile & Rocket Industries:

Formed, 10/14, p.72  
Missile report, 10/28, p.113

### Atomic Energy:

A new stainless (clad boron) atomic energy, 9/9, p.104; 8/12, p.114  
AEC report: U. S. leads in atomic power, Russian claims discounted, 8/5, p.59  
AEC report: Time for atomic decision, 11/18, p.119  
AEC unveils new ETR: Super tester for reactor materials, 10/7, p.166  
Air transport, nuclear-powered, 10/14, p.69  
ANPA organized, 11/25, p.88  
Atomic fuel element plants: Producing for the new technology, 8/12, p.113  
Atomic reactors get top-grade welds (checklist), 11/25, p.99  
Beryllium role in reactors, 8/1, p.152  
European market, Westinghouse-Belgium agreement, 8/19, p.11  
Euratom treaty effective, 12/3, p.25  
Japan needs atom (Westinghouse Weaver reports), 7/8, p.59  
Merchant ship by 1960, 8/12, p.6  
Merchant ship, gas-cooled reactor, TO, 8/12, p.123

### Atomic Energy Commission:

Cobalt 60 prices reduced, 8/2, p.45  
Pilot plant to mass produce 'hot' atoms from waste, 8/5, p.49  
Public power bill, 8/5, p.62  
Test reactor unveiled (ETR), 10/7, p.166  
Zirconium orders, 9/2, p.89

### Atomic Industrial Forum:

Roboff (Sylvania) suggests marketing program, 11/11, p.53

### Attitude Survey: See Management

### Austempering: See Heat Treatment

### Automation:

Auto industry weighs automation costs, 8/12, p.84  
Automation: U. S. theme at Stockholm fair, 8/26, p.81  
Cadillac: Machine culls out bad cylinder blocks, 8/12, p.130  
Chase Brass: Automated tube mill, 11/18, p.214  
Chrysler-Airtemp: New line u-blower wheel production, 7/1, p.124  
Combustion Eng.: How to keep a foundry automatic, 10/1, p.120  
Cummins puts in mid-automation, 7/22, p.117



ton Mfg.: Loader speeds plating line, 12/2, p.108  
 rigidaire makes cabinet in 38 seconds, 8/19, p.194  
 ch Refrigerators: Spotwelder speeds assembly, 12/16, p.108  
 ontia: Crankshaft line with a new look, 11/11, p.114  
 ontia: Casts 150 engine blocks an hour, 12/2, p.122  
 gains favor: Automatic marking gains favor (slab mill), 11/25, p.100  
 van Aero.: Double contour panels spotwelder automatically, 7/15, p.119  
 S automates stamping, 9/9, p.122  
 imken line: How Timken makes bearings, 9/30, p.88  
 imken shipping center: IBM computer control, 9/9, p.84  
 erton annealing line: Expansion accents productivity, 10/7, p.170  
 estinghouse (Sandusky): Plant design is flexible, 8/5, p.110  
 heeling: Steel plant automates packaging, 7/8, p.112

Automotive:

door sedans—what you get for your money (chart), 11/18, p.123  
 558 previews, 10/14, p.80  
 558 sales outlook, Buick chief, 9/23, p.94  
 558 style trends, 8/12, p.87  
 558 styling trends tell, 11/4, p.79  
 look ahead at part making, 7/29, p.112  
 erial sedan, Hiller Helicopters conception, p.c., 7/29, p.72  
 luminum dream cars (Kaiser), 8/5, p.70  
 luminum frames far in future, 7/8, p.67  
 luminum use, 11/18, p.124  
 luminizing valves, 9/23, p.117  
 MC-Studebaker Packard: Little Two auto makers rally, 7/29, p.85  
 MC faces crucial year, 9/30, p.59; crisis denied, 9/23, p.94  
 rgonaut: Another new car (Cleveland), 8/26, p.49  
 rgonaut massive frame, 11/18, p.124  
 auto price probe: A draw?: Car cost breakdown, 12/9, p.113  
 automation plans for 1958, 8/12, p.84  
 adillac cylinder block machine sorts out rejects, 8/12, p.130  
 Checker Cab passenger car, 10/14, p.79  
 Chrysler spline rolling, 8/12, p.142  
 Dealers clear out stocks, 10/7, p.133  
 Earnings 1st half, GM, Ford, Chrysler, 8/5, p.70  
 Electric motors, new look? 9/23, p.94  
 Engines—six cylinder outlook, 12/9, p.127  
 Exports, 1st half, 8/26, p.49  
 Ford carburetor facility, Rawsonville, Mich., 12/2, p.67  
 Ford-Edsel: STEEL reports, 9/9, p.78  
 Ford-Edsel series, station wagons, 7/8, p.68  
 Ford: Nance heads L-M Div., 9/9, p.93  
 Ford stylists depict 2000 A.D., 8/26, p.47  
 Ford triple-action stamping press, 8/19, p.167  
 Foreign car, British boom, 7/29, p.83  
 Foreign car lease, 7/29, p.86  
 Foreign competition, 12/30, p.40  
 Fuel injection falters, 10/21, p.51  
 Fuel injector, low cost, 12/23, p.50  
 GM—Curtice to retire, 7/1, p.47  
 German Goliath marketed on West Coast, 12/2, p.68  
 Horsepower race over? 11/11, p.73  
 Import race starts, 7/8, p.68  
 Japanese auto, Toyota, 10/14, p.60  
 Latin American market, 9/2, p.101  
 Medium price car, '65 outlook, 12/9, p.108  
 Medium price car, cost breakdown (chart), Kefauver hearings, 12/9, p.113  
 Medium price market hit, 10/28, p.133  
 Optional equipment gain, 7/22, p.71  
 Packard-Hawthorn, 10/21, p.52  
 Pontiac automated crankshaft line, 11/11, p.114  
 Pontiac automated foundry, engine blocks cast, 12/2, p.122

Powdered metal parts, consumption, 9/23, p.93  
 Production, 1st half, 7/15, p.68; 4th quarter, 11/25, p.73  
 Production, 1956-57, 10/7, p.133  
 Production, 1957, 12/2, p.48  
 Production-sales (firms) for Nov., 12/16, p.74  
 Registrations, cars and trucks, 12/2, p.68  
 Scrapping age, how used in market potential figuring, 12/23, p.49  
 Size of cars effect on traffic, 11/18, p.104  
 Solar-power foreseen, 12/9, p.128  
 Station wagon boom, 8/19, p.121  
 Tool and die gains, 12/2, p.68  
 Tooling: Prototype die use grows, 12/16, p.73  
 Truck production, 12/30, p.39  
 Truck sales, 10/7, p.133  
 UAW demands (see Labor)  
 Vauxhall prices, 9/9, p.94  
 Vibration cut (Buick), 7/15, p.68  
 Welding auto frames, speeded with CO<sub>2</sub>, 7/1, p.43  
 Wheel rims, vertical storage units, 12/16, p.74

II

Barrel Finishing:

Barrel finishing made simpler (chart), 9/9, p.108

Bars:

4th quarter shipments, 9/2, p.183  
 Color code marking, 7/29, p.82  
 Something new in cold bars (La Salle and Republic), 9/16, p.163

Battelle Memorial Institute:

Intermetallic compounds, new materials, 12/30, p.55

Bearings, Bushings:

Bigger powdered bearings, joined with silver solder, 12/23, p.72  
 How Timken makes bearings, production line, 9/30, p.88  
 Liners lubricate bearings (Teflon and glass fibers), 9/9, p.110

Belgium:

Atomium erected for world fair, 12/23, p.46  
 Export-imports, 12/16, p.71

Beryllium:

Beryllium takes new step, atomic reactors, 8/19, p.152  
 Brush plant, production uses, 12/2, p.110

Bituminous Coal Research Inc.:

Research group formed, 12/23, p.62

Blast Furnace & Coke Assn.:

Elects, B, 7/8, p.91

Blast Furnace Operation: See Steelmaking

Blasting: See Cleaning, Blasting

Blower Wheels:

New line ups blower wheel production for air conditioning and heating equipment at Chrysler Airtemp, 7/15, p.124

Boats: See Outboard Motors

Bonding:

What glass can offer metal, 8/19, p.155

Books & Booklets:

Census SIC system revised, 8/5, p.65  
 Properties of cold worked steels, 9/16, p.158

Boron:

Clad boron: A new stainless for atomic energy, 9/9, p.104; also 8/12, p.114  
 Boron deepens casting hardness, 10/21, p.83

Brazing:

Modern brazing series:  
 Brazing alloy selector (filler metal), 10/7, p.163  
 Brazing for high temp. use (jet engines), 8/26, p.82  
 How to braze titanium, 7/22, p.103  
 Rules for brazing, 7/8, p.102

British Iron & Steel Research Assn.:

Computer data on blast furnaces, TO, 12/9, p.155  
 Elects, B, 12/2, p.88  
 National Steel program outlined (blast furnace), 12/9, p.164  
 Plasteel developments, TO, 12/9, p.155

Building Research Institute:

Elects president, B, 8/26, p.64

Business (Economy):

3rd quarter upturn, 12/9, p.131  
 1957: Yearend report, 12/30, p.43  
 1958: NAM survey, 12/16, p.60  
 1958 outlook, 12/2, p.71  
 1958 recession? 7/29, p.78  
 Forecasts:  
 Goodrich (Hogan), 12/23, p.29  
 Goodrich (Nygaard), 12/9, p.132  
 Hamaker (Republic), 9/9, p.57  
 Lester (Princeton), 10 years, 10/14, p.71  
 Slichter (Harvard), 9/30, p.39  
 Pay hikes in recessions, 12/9, p.107  
 Price rise tied to wages and productivity, 9/30, p.45  
 Price spirals predicted (Clague-BLS), 10/7, p.124  
 See Inflation

Business: (Markets):

Adhesive markets, 10/28, p.122  
 Air conditioners, 7/8, p.64  
 Appliances, 9/9, p.63  
 Appliances, next ten years, (chart), 12/2, p.56  
 Bellwether—tool and die shops, 8/12, p.73  
 Builders' hardware, 9/16, p.89  
 Business (new), 7/29, p.66  
 Business (new), how to start, 11/11, p.106  
 Capital goods, 10/21, p.42  
 Cast steel shot and grit, 7/22, p.67  
 Component makers' price outlook, 9/30, p.49  
 Components, 3rd quarter, 7/1, p.99  
 Components, 4th quarter, 11/4, p.65  
 Consumer goods, 10/21, p.37  
 Conveyors, 12/16, p.61  
 Curtain walls, 12/9, p.115  
 Diamond market, 8/12, p.75  
 Electric motors, 9/2, p.87; 9/23, p.85  
 Electronic counters, 11/11, p.62  
 Electronic firms-failures, 7/8, p.47  
 Electronics, 11/25, p.60  
 Equipment firms, 10/7, p.122  
 Fasteners outlook, 9/16, p.193  
 Forgings, 12/23, p.39  
 High-fidelity sales, 8/26, p.37  
 Instruments, 9/9, p.66  
 Investment castings, 7/8, p.65  
 Leisure: Market for metals, 7/29, p.71  
 Machine tool: Builders spike slump rumors, 7/29, p.118  
 Machine tool orders, 12/2, p.47  
 Metalworking, midyear survey, 7/1, p.33  
 Metalworking, 1st half survey, 8/5, p.55; 3rd quarter, 10/28, p.119  
 Oil field equipment, 12/9, p.123  
 Radioisotopes, 9/30, p.56  
 Railroad equipment-Buffalo area, 7/15, p.63  
 Rubber industry, 7/29, p.74  
 Semiconductor sales, 11/11, p.71  
 Semiconductor rectifiers and equipment sales, 12/2, p.48  
 Steel castings, 11/18, p.111  
 Steel mill equipment, 7/8, p.56  
 Steel wool, 8/26, p.103  
 Tool and die shops, 8/12, p.73  
 Used machine tools, 11/4, p.69  
 Valves, 12/2, p.63

Business & Defense Services Adm.:

Appointments:  
 Lee, 7/22, p.64  
 Lundell, 11/4, p.72

Buying:

Make or Buy, management series, 10/14, p.105

C

California Metal Trades Assn.:

Bargaining agent for west coast firms, 7/22, p.64

Cameras: See Photography

Canada:

Pig iron production, 12/16, p.165  
 Protests steel imports, 12/23, p.47  
 Steel capacity up, 10/7, p.131  
 Welland Tube mill: "Big Inch" pipe, 7/8, p.106

Canmaking:

Kaiser's deep draw tech. aims at can market, 11/4, p.71

Capacity:

J&L plants in U. S. (map), growth in capacity, 8/12, p.71  
 Metalworking areas, excess capacity, 11/18, p.103  
 Steel expansion, firms (chart), 9/16, p.79  
 Steel ingot, U. S. Steel predicts, 8/5, p.49

Capital Expenditures:

Asbury forecasts next four years, 7/1, p.28  
 Capital goods, 4th quarter, 10/21, p.42  
 Capital goods spending, 12/23, p.41  
 New plant and equipment, 9/16, p.83; 12/23, p.41

Carbides: See Tools Cutting

Carbon Dioxide:

Faster CO<sub>2</sub> cores, 9/2, p.150  
 Shell molding—CO<sub>2</sub> combined, TO, 9/23, p.117  
 Welding speeded with CO<sub>2</sub>, auto frames, 7/1, p.43

Carbon Monoxide:

CO safety course at Ford steel div., 7/29, p.140

Carbon Steel:

Carbon steel pallets: Alloy steel solves warping problem, 7/29, p.138  
 How to upgrade cold-finished steel, 12/23, p.66  
 Low carbon steel: Case annealing symposium, 8/5, p.100

Case Institute of Technology:

Annealing symposium planned, 8/5, p.100  
 Excerpts from symposium, 11/11, p.120  
 Prepared atmospheres, 11/18, p.160  
 Engineer courses, industry aid, 11/18, p.114  
 How to upgrade cold-finished steel, 12/23, p.66

Caster & Floor Truck Manufacturers' Assn.:

Elects, B, 11/18, p.142

Casting, Castings:

A way to speed analysis (GE-spectrometer), 12/9, p.156  
 AF contract, castings for super-sonics, 12/16, p.87  
 Air setting speeds coremaking, 7/22, p.120  
 Alcoa's king-size casting, 10/7, p.198  
 Boron deepens casting hardness (sprockets for crawler tractors), 10/21, p.83  
 Continuous casting, Russian use, 11/4, p.72  
 Gray iron, industry report, 10/7, p.129  
 Investment caster (Austenite) uses vacuum, 11/25, p.96  
 Investment castings sales, 7/8, p.65  
 Magnesium casting shipments, 12/2, p.160  
 Malleable castings, 4th quarter, 10/28, p.130  
 Nonferrous casting shipments, 12/2, p.137  
 Pontiac casts 150 engine blocks an hour on automated line, 12/2, p.122  
 Precision castings (Misco) three new ways, 7/15, p.107  
 Precision castings (Dieter) process for shell molds, 11/11, p.110  
 Press forging strengthens castings, 10/7, p.174  
 Steel castings, industry report, 11/18, p.111  
 Vacuum CO<sub>2</sub> gassing machine for coremaking, 9/2, p.150  
 Vacuum castings, Duquesne Wks., 10/14, p.207  
 See Foundries



**Cathodic Protection:** See Corrosion**Census:**

Household members, 9/23, p.74  
Housing units, 12/2, p.48  
Metalworking concentration:  
What's the score (chart), 7/29,  
p.76  
Metalworking markets, Census SIC  
revised, 8/5, p.65  
Workers holding two jobs, 12/16,  
p.54

**Ceramics:**

Coating beats heat: New ceramic  
insulates aluminum for missiles  
and aircraft, 9/16, p.135  
New slant on ceramics: Photo-  
micrographs show deposits on  
ceramic cutting tools, 10/7,  
p.168

**Chain Saws:**

New markets, 8/12, p.68

**Charts, Tables:**

ASWA: Steel product cost an-  
alysis, 10/21, p.48  
Autos—'58, prices, specs, 11/18,  
p.123  
Auto production (see Automotive)  
Auto price probe, cost breakdown  
of car, 12/9, p.113  
Barrel finishing chart, 9/9, p.109  
Brazing alloy selector, 10/7, p.163  
Defense budget itemized, 11/25,  
p.59  
Finished steel shipments, 7/29,  
p.172  
Fringe benefits, cost per employee,  
12/2, p.64  
Foundry equipment orders, 12/16,  
p.78  
Gear sales, 12/16, p.79  
Industrial production index, 3rd  
quarter, 12/9, p.131  
Iron ore statistics for Sept., 11/11,  
p.175; for Oct., 12/16, p.155  
Machine tool orders, 12/16, p.78  
Metalworking earning, 1st half,  
8/5, p.55; 3rd quarter, 10/28,  
p.119  
Missile scoreboard, 10/7, p.120  
Radio & TV output, 12/23, p.55  
Scrap, 1957 review, 12/30, p.29  
Scrap produced in plants, 12/16,  
p.69  
Screw machine product orders,  
12/16, p.79  
Stainless steel, producers, users,  
11/4, p.108  
Steel capacity expansions, 9/16,  
p.80  
Steel employment, 12/23, p.54  
Steel mill shipments, 1st half,  
8/19, p.237; 1st nine months,  
11/25, p.129  
Steel product shipments, 9/16,  
p.196  
Vacuum melted alloy producers,  
7/22, p.137  
Valve materials, 12/9, p.162

**Chemical Baths:** See Pickling**Chemical Capping:**

Chemical capping cuts drawing  
rejects (Ford), 8/26, p.76

**Chemical Fuels:**

Planes use metallic fuels, 9/2,  
p.92

**Chem-Milling:** See Machining**Chicago:**

Industrial development projects,  
7/15, p.57; costs, 8/26, p.41

**China:**

China's economy balks Reds, 9/30,  
p.55

**Christmas Bonus:**

Survey, 12/9, p.108

**Chromium:**

Chromium crack free and bright,  
plating process, 8/19, p.173

**Clad Metals:**

Clad boron: A new stainless for  
atomic energy, 9/9, p.104  
Inconel clad nickel wire, 9/9,  
p.130

**Cleaning, Blasting:**

Abrasive blast cleans weldments,  
12/23, p.78  
Wet blast finishing goes auto-  
matic (Thompson Products),  
12/16, p.106

**Clinics:** See Inspection, Testing**Coal & Coke:**

Aerial photo: Coal, iron ore sup-  
plies, 9/16, p.85  
American Gilsonite coking plant  
and refinery: New source for  
high purity metallurgical grade  
of coke, 8/12, p.76  
Bituminous coal production, 7/8,  
p.47  
Coal research group formed,  
12/23, p.62

**Coatings:** See Finishes, Coatings,  
Paints**Cobalt:**

AEC reduces price of cobalt 60,  
8/26, p.45

**Cogging Mill:** See Steel Mills**Cold Working:**

Cold heading copper for economy,  
9/23, p.133  
Cold forger turns out odd-shaped  
fasteners, 9/16, p.141  
Cold treatment ups workability  
(Douglas), 8/5, p.93  
How to upgrade cold-finished  
steel, 12/23, p.66  
Market for cold-rolled shapes  
grows, 10/28, p.259  
Planisher cold working a fusion  
weld in water heater shell, 8/19,  
p.150  
Something new in cold bars, cop-  
per-controlled chemistry, 9/9,  
p.163

**College-Industry Programs:**

Executive courses, 7/15, p.65;  
12/30, p.20  
Professors visit Warner & Swasey  
plant, 7/22, p.69  
See Engineers

**Color:**

Steel coding, 7/29, p.82

**Committees:**

Corporate use, survey, 11/4, p.60

**Company Operations:**

AC Spark Plug: Martin Caserio  
interview, 11/25, p.63  
Golden Anderson Valve: Re-  
juvenation pays off, 11/4, p.75  
Jessop Steel: Small steelmaker  
prosper, 12/16, p.63  
James Lefell & Co.: Specializa-  
tion pays off, 8/5, p.58  
Ohio Steel Foundry Co.: J. E. Gal-  
vin interview, 9/23, p.89

**Components:**

3rd quarter survey, 7/1, p.99  
4th quarter survey, 11/4, p.65  
Price outlook for parts, 9/30, p.49

**Construction:**

1958 outlook, private and public,  
10/14, p.65  
Bridge uses T-1 steel (U. S. Steel)  
at Calif., 7/8, p.57  
Builders' hardware sales, 9/16,  
p.89  
Cleveland building code charge,  
curtain walls, 10/14, p.67  
Contract awards—1957, 8/12, p.79  
Curtain walls, Chicago, 10/7, p.124  
Curtain walls, industry, 12/9,  
p.115; 10/28, p.114

**Cost Analysis:**

Steel product, where distributors  
can boost profits, (chart),  
10/21, p.48  
Make or Buy, management series,  
10/14, p.105

**Consumer Goods:**

Industry report, 10/21, p.37

**Consumer Price Index:**

Buying power slips, 10/7, p.113  
Gentle price rise, 7/1, p.27

**Consumption:**

Electric power, 8/12, p.76  
Finished steel '57, 10/21, p.113  
Iron ore, 11/11, p.178  
Nickel, 12/23, p.35  
Oxygen—industrial consumption,  
7/15, p.55  
Personal consumption—goods and  
services, 10/28, p.114  
Powder metal, automotive parts,  
9/23, p.93

**Controls:**

See Numerical Controls  
See Production Control

**Conveyor Equipment Manufac-  
turers Assn.:**

Conveyor sales, 12/16, p.61  
Elects, 11/25, p.88

**Copper:**

Cold heading copper for economy,  
9/23, p.133

**Corrosion:**

Case history on cathodic pro-  
tection (underground piping),  
chemical or electrolytic cor-  
rosion, 8/12, p.128  
Crack free chromium plating, cor-  
rosion resistant, 8/19, p.173  
Glass linings for metal, corrosion  
resistant, 8/19, p.155  
New ways to fight corrosion  
(cathodic protection, inhibitors,  
materials), 8/26, p.68  
New ways to fight corrosion  
(organic and metallic coatings),  
9/2, p.158  
Transparent VCI film protection,  
TO, 12/2, p.93

**Customer Service:**

Pretesting new products with cus-  
tomers, 11/11, p.70  
Reliance Electric, customer service  
school, 9/9, p.73

**Consulting Services:**

Business expenditures, 11/11, p.54

**Counters, Computers:**

Airborne (jet) digital computer,  
TO, 12/16, p.101  
Electronic counters, industry re-  
port, 11/11, p.62  
Timken shipping center—IBM  
computers, 9/9, p.84

**Curtain Walls:** See Construction**Cutting, Shearing:**

Coil splitter for SPS automated  
line, 9/9, p.122  
Shear cuts scrap, 11/4, p.70  
Shear knife, tips on selection, set-  
ting and care, 8/19, p.183  
See Tools (Cutting)

**D****Deburring:**

Barrel finishing made simpler,  
9/9, p.108  
Deburring titanium at North  
American, 9/9, p.121

**Decentralization:**

UAW vs. decentralization, 8/5,  
p.69

**Defense:**

Budget allotments, 8/19, p.114  
Budget (chart), President's plan,  
11/25, p.59  
Budget for '59? 10/7, p.126  
Budget hearings: Missile develop-  
ment, 11/18, p.109  
Budget deficit coming? 12/9, p.107  
McElroy tours defense setup, 9/23,  
p.86  
Spending, crash programs for Con-  
gress outlined, 12/2, p.60  
Spending, Congress's stand, 11/25,  
p.53  
Spending, White House gages pub-  
lic opinion, 11/11, p.53  
See Missiles  
See ODM

**Defense Contracts:**

AF shift, effects appraised, 7/22,  
p.51; 7/29, p.65  
Aircraft cutbacks, 10/28, p.113  
Aircraft engine-maker profits stud-  
ied by Rep. Hebert, 7/29, p.65  
Aluminum supply contracts re-  
vised, 9/23, p.73  
Chance Vought—AF castings,  
12/16, p.87  
Radar and armament contracts,  
Navy, 9/9, p.107

**Degassing:** See Vacuum**Depreciation:**

Bulletin F overhaul, 8/12, p.136  
Plea for tax reform: Make paper  
profits real, Rev. Hogan (Ford-  
ham), 10/28, p.129  
See Amortization

**Desulfurizing:**

Diamond Alkali reactor: Sulphur  
and silicon lowered fast, 7/1,  
p.74

**Diamonds:** See Industrial Di-  
amonds**Diecastings:**

ADCI reports industry, 9/23, p.59  
Look to aluminum diecasting  
8/5, p.89  
How to avoid cracking die steel  
9/30, p.79; 10/7, p.200

**Die Steels:** See Tool Steels**Dies:** See Tool and Dies**Distribution:**

See Warehousing & Distribution

**Diversification:**

J. I. Case—American Tractor  
merger, 10/21, p.47  
Makepeace Co., 8/26, p.45  
Young Spring & Wire program  
how it looks at mergers, 8/1,  
p.83  
See Product Development

**Drawing:**

Chemical capping cuts drawing  
rejects (Ford), 8/26, p.76  
Drawability of titanium defined  
12/9, p.179  
Kaiser drawing tech. aims at car  
market, 11/4, p.71

**Drilling:**

Next step in drill evolution? 10/2,  
p.84  
Vacuum drilling jig, Martin  
jet seaplane riveting, 11/1,  
p.178

**Drop Forging Assn.:**

Elects, B, 7/8, p.92  
Moves to Cleveland, B, 8/12, p.10  
Reorganization, B, 11/11, p.90

**Ductile Iron:**

Ductile iron: Why is it popular?  
9/16, p.130  
Inco surveys steel plant users  
12/16, p.110  
More hot strength for ductile iron  
(alloy conditions), 7/8, p.96  
Temperature properties, TO, 7/1,  
p.65

**Dust Collectors & Filters:**

Cleaning electrostatic precipita-  
tors: New firm, Premco, 8/17,  
p.164  
Electrostatic precipitators at au-  
scrapyard, 12/30, p.30  
Electrostatic precipitators, Kaiser  
12/30, p.37

**E****Earnings:**

See Financial (company)  
See Salaries  
See Wages

**Eaton, Cyrus S.:**

Forms ore combine at Ungava  
Bay, Que., German-U.S.-Ca-  
nadian firms, 9/23, p.81

**Economy:** See Business**Editorials:**

11 More Fairless Works! 9/11,  
p.77  
'58 to Separate Men from Boys  
12/16, p.57  
1958—Year of the Markteer, 11/11,  
p.107  
An Urgent Matter (labor unions)  
8/26, p.33  
Are Workers Really Scarce? 9/2,  
p.77  
Care for Your Customer's Profit  
9/2, p.85  
Do Unto Others . . . 12/23, p.3  
Don't Run for the Hills! 11/1,  
p.63  
Expanding for Efficiency, 10/7,  
p.117  
It's Time for Sensible Selling,  
12/30, p.23  
Know Your Materials, 10/28, p.11  
Needed: A Pricing Policy, 9/30,  
p.43  
Needed: Better marketing, 8/1,  
p.53  
No Cause for Gloom, 7/1, p.31  
One Year Late (pricing invest-  
igation), 7/8, p.51  
Parable of the Prices, 7/15, p.5  
Plan for Long Range, 7/29, p.6  
Potomac Curtain (communica-  
tion), 12/2, p.51  
Satire on Retirement, 11/11, p.1



- attered Complacency (missiles), 10/14, p.63  
 umner Theater! (Kefauver hearing), 8/19, p.105  
 e Left Hand Knoweth Not!, 11/25, p.57  
 e New Technology, 8/12, p.71  
 e Right To Manage, 7/22, p.55  
 ink for Tomorrow, 9/9, p.61  
 y Not a Profit?, 10/21, p.35
- Electric Motors:**  
 e Motors & Generators
- Electric Overhead Crane Institute Inc.:**  
 ects, B, 12/23, p.63
- Electric Power:**  
 ISI report, consumption comparison, 8/12, p.76  
 electricity from gases, TO, 9/16, p.129
- Electrical Equipment:**  
 ndustry prospects, 11/18, p.104  
 agnetic "Cubex" steel (Westinghouse), oriented, 10/28, p.113; 11/11, p.131  
 emiconductor sales soar, 11/11, p.71  
 emiconductor rectifiers and rectifier equipment sales, 12/2, p.48
- Electrodes:**  
 eelectrode quality depends on coating, 9/30, p.83  
 on-base electrode boosts gear life, 12/30, p.70  
 on powder coatings, 12/9, p.180
- Electrolytic Machining: See Machining**
- Electronics:**  
 ssembly of electronic parts by punched cards, 9/16, p.144  
 lectronic firms—failures, 7/8, p.47  
 M—Pulse Synchronized Unbalance Indicator, for auto engines, 8/19, p.180  
 inature equipment timer, TO, 7/15, p.103  
 electing coils electronically, 8/19, p.164  
 nduents learn electronics (Reliance school for maintenance), 9/9, p.73  
 nbridged electronics, industry report, 11/25, p.61  
 West Coast boom, 7/22, p.58  
 ee Counters, Computers
- Electronics Industries Assn.:**  
 Export-imports, report, 12/2, p.47  
 ew name, 7/29, p.66  
 issile use, 8/12, p.67  
 Trade Shows cost, 9/9, p.68
- Electroplating, Plating:**  
 Cadmium plating: How to avoid embrittlement, 11/11, p.132; TO, 7/15, p.103  
 Chromium plating free and bright (decorative crack), 8/19, p.173  
 Gold plating, no current needed, TO, 8/19, p.149  
 Loader speeds auto plating line, 12/2, p.108  
 Nickel plating is stress-free, sulfamate bath, 9/30, p.78  
 Nickel coatings, TO, 10/21, p.79  
 pH controls rinse for bright dip unit, 12/9, p.203  
 Vacuum plating cadmium, 9/9, p.134
- Electrostatic Precipitators:**  
 See Dust Collectors
- Electrostatic Spray:**  
 Electrostatic spraying cuts floor costs, 11/18, p.204
- Employee Relations: See Industrial Relations**
- Employers Association of Detroit:**  
 Pattern bargaining increase, 11/11, p.59
- Employment, Unemployment:**  
 10 million jobs by '65, help wanted, restricted to age 45, 11/4, p.76  
 Aircraft employment, 7/8, p.47; 8/12, p.67  
 Alabama layoffs, 10/7, p.113  
 Michigan jobless tied to automation, 8/19, p.101  
 Moonlighting practice, two jobs at once, 8/12, p.85
- Steel employment chart, 12/23, p.55  
 Unemployment under 5% of labor force, 12/23, p.53
- Engineering Center:**  
 Site-UN Plaza, 12/2, p.59
- Engineers:**  
 Are engineers scarce? Use fair recruiting practices, 9/2, p.98  
 Better training needed: Case dean reports before ASTE, 11/18, p.114  
 How to aid your engineers, 7/15, p.65  
 Salary for graduates, 7/8, p.48  
 Shortage, Deutsch & Shea survey, 11/18, p.115
- Environmental Equipment Institute:**  
 Elects, 9/2, p.120
- Equipment Market:**  
 More equipment price hikes due, 10/7, p.122
- Etching:**  
 Photoetching forms thin parts, 11/18, p.153  
 Process for etching printed circuits, TO, 12/23, p.65
- Europe:**  
 Euromarket formed; steel developments by '60, 12/30, p.25  
 Steel export competition in West Europe, 10/7, p.131  
 Steel production, 1st quarter comparisons ('57-'56), 7/22, p.63  
 See Foreign Outlook (articles)
- Executives: See Management**
- Expansion:**  
 Aluminum: Consumption, production, facilities, 8/19, p.107  
 National Steel, Humphrey predicts, 11/11, p.64  
 Steel capacity expansion, 9/16, p.79  
 West Coast: Kaiser Steel bets on future, 7/29, p.165  
 See Plant Expansion
- Extrusion:**  
 Autos: A look ahead at part making, 7/29, p.112
- F**
- Fabrication & Assembly:**  
 Assembly by punched cards, electronic parts, 9/16, p.144  
 Ideas for difficult jobs: Fabricated composites, wire and tube products, 9/9, p.130  
 Jet engine assemblies brazed for high temp., 8/26, p.82  
 Lockheed tech. for Starfighter, 12/2, p.100  
 Plating machine mockup, easy assembly, 8/26, p.38  
 Stainless steel grades, best for fabrication, 11/4, p.119  
 Vacuum assembly rivets holes in aircraft skins, 11/18, p.178  
 Spotwelder speeds assembly of refrigerator cabinets, 12/16, p.108  
 See Automation
- Farm Equipment:**  
 Sales, 9/23, p.74
- Farm Equipment Institute:**  
 Elects, B, 10/7, p.152
- Fasteners, Fastening:**  
 Cold forger turns out odd-shaped fasteners (1¼-in. bolts), 9/16, p.141  
 Cold heading copper, 9/23, p.133  
 Cutting stock preparation costs (bolt wire), 12/9, p.193  
 Fasteners, outlook, 9/16, p.193  
 Steel coils used for fasteners selected electronically, 8/19, p.164  
 Vacuum drill rivets holes in aircraft skins, 11/18, p.178
- Films: See Motion Pictures**
- Financial:**  
 Firms net income after taxes, 3rd quarter, 11/25, p.54  
 GNP, 2nd quarter, 7/29, p.66  
 GNP forecast, 11/25, p.53  
 Metalworking earnings, 1st half, 8/5, p.55  
 Metalworking earnings, 3rd quarter, 10/28, p.119
- Metalworking, earnings after taxes, percents, 8/26, p.30  
 Small loans, how to negotiate, 8/26, p.40  
 Steel, 1st half earnings (comparisons), 7/29, p.65
- Finished Steel: See Shipments**
- Finishes, Coatings, Paints:**  
 Coating beats heat: New ceramic protects aluminum, 9/16, p.135  
 Coating rules, 10/14, p.115  
 Electrode quality depends on coating, 9/30, p.83  
 Electrostatic floor spray cuts costs, 11/18, p.204  
 Galvanizing, how to cut costs, 7/8, p.108  
 Glass applications, new uses, 8/19, p.154 and TO, 9/23, p.117  
 Organic and metallic coatings for corrosion, 9/2, p.158  
 Molybdenum coating process, TO, 12/2, p.93  
 Plasteel, British dev., TO, 12/9, p.155  
 Water paint for metal parts (Ford), 8/5, p.88  
 Wet blast finishing (liquid abrasive for metal parts), 12/16, p.106  
 Spray machine-test panels, TO, 7/1, p.65  
 See Corrosion
- Fire Equipment:**  
 Fiberglass ceramic fiber, flame safety, TO, 8/12, p.123  
 Republic Steel prevention program (Clinic), 7/15, p.59
- Floors:**  
 Electrostatic spraying cuts costs, 11/18, p.204
- Flying Saucers:**  
 Report, 11/18, p.116  
 Steel saucer (Britain) antenna for radio telescope, 12/23, p.45
- Foreign Outlook:**  
 Articles (Foreign Outlook for 1958):  
 1. France plans more steel; Sweden eyes auto market, 12/9, p.124  
 2. West Germany levels off; Belgium is gloomy, 12/16, p.70  
 3. UK is optimistic (England), 12/23, p.45  
 Euromarket formed (six-nation common market), 12/30, p.25  
 Italian steel faces tests, 12/23, p.47
- Foreign Trade:**  
 1956 domestic and foreign sales (firms): Giants abroad, too (chart), 12/30, p.26  
 1958 outlook, administration push, 10/28, p.126  
 Auto exporters, top ten, 9/9, p.57  
 Export steel prices up, 9/2, p.188  
 Jap flatware to U.S., 10/21, p.39  
 Lead and zinc tariff hearings end, 12/2, p.160  
 Machine tool companies broaden markets, 8/26, p.63  
 National security clause to stay, 10/28, p.126  
 Steel imports, wire mill products, 11/11, p.161  
 Trademark colors, 7/8, p.48  
 U.S.-German licensing ties, 12/16, p.71
- Foremen:**  
 Foremen, management's first line, 10/14, p.76  
 Help foremen manage labor contracts, 8/19, p.118  
 How to cut grievances, 12/23, p.40  
 Junior brass attend class: Republic Steel and Thompson Products, 12/16, p.64  
 NFI survey, 7/22, p.52
- Forging:**  
 Air Force heavy presses cut forging costs (landing gear parts), 9/9, p.118  
 Castings forged, 10/7, p.174  
 Cold forger turns out 1¼-in. bolts, 9/16, p.141  
 Industry report, 12/23, p.39  
 Rolls forge precision parts, 7/8, p.97  
 Thread inserts aid forging die, 12/2, p.116
- Forming, Bending:**  
 Cold treatment ups workability (Douglas), 8/5, p.93
- Compression forming (Lockheed), 12/2, p.100  
 Hydroforming: Complex shapes at bargain rates, 8/12, p.124  
 Metal spinning, simple production technique, 9/2, p.131  
 Radial draw former (Convair), 12/16, p.87  
 Roll forging precision parts, 7/8, p.97  
 Spine rolling at Chrysler, 8/12, p.142  
 Stretch press forms jet wing panels, 9/2, p.130  
 Wipe forming trend, TO, 12/30, p.55
- Foundries:**  
 A way to speed analysis (GE-x-ray), 12/9, p.156  
 Air setting speeds coremaking, 7/22, p.120  
 Austenal uses vacuum, 11/25, p.96  
 Clinic for scrap problems, 11/18, p.112  
 Conveyor carries castings to cleaning unit (Dalton Foundries), 7/8, p.114  
 Conveyor belt—synthetic rubber handles hot sand (I-F Mfg.), 9/23, p.130  
 Conveyor belt mixer—taconite plants (Pekay Mixer-Muller), 12/2, p.126  
 D molds make precise steel castings, 11/11, p.110  
 How to keep a foundry automatic (Combustion Engr.), 10/14, p.120  
 Job training for line supervisors, 7/29, p.107  
 Labor costs send castings up, 8/26, p.39  
 Misco: Here are three new ways to make precision castings, 7/15, p.107  
 Pontiac automatic line, engine blocks, 12/2, p.122  
 Rollmaker forges ahead (Ohio Steel Foundry), 9/23, p.89  
 Vacuum CO<sub>2</sub> gassing machine for making cores, 9/2, p.150  
 See Casting, Castings
- Foundry Equipment Manufacturers Assn.:**  
 Elects, B, 11/11, p.90
- France:**  
 1958 outlook, 12/9, p.124  
 Gets two-layer sinter plant, 12/23, p.74  
 Price freeze on raw materials, steel exempted, 9/9, p.69
- Freight Cars, Freight Rates:**  
 ICC grants increases, 7% to shipping charges, 8/12, p.78  
 ICC increase sought, 11/25, p.53  
 Plastic for cars, 12/23, p.30
- Fuel:**  
 Aircraft high-energy (Olin), 7/15, p.56  
 Aircraft metallic fuels, 9/2, p.192  
 LP-gas consumption, 8/19, p.102  
 LP-gas trend continues, 12/30, p.28  
 What LPG engines in fork lift trucks offer you, 7/15, p.104
- Furnaces, Ovens (Heating, Heat Treating):**  
 Checker burner-gas speeds light-up on rebuilt openhearth, 8/19, p.158  
 Republic Steel: Furnace built off-site, slid in place at Buffalo, 9/2, p.135  
 Spheroidizing furnace, how to get more from, 12/9, p.208
- Gages:**  
 A tenth of a millionth of inch gage sought, 9/9, p.121  
 12-ft. gaging unit inspects jet engine parts, 9/16, p.155  
 Gage block interferometer, TO, 12/30, p.55  
 Infrared radiation, British gage, TO, 12/2, p.93  
 Watervliet Arsenal gage thread grinder, 7/29, p.116
- Galvanizing:**  
 How to cut galvanizing costs, 7/8, p.108
- Gas: See Fuel**



**Gears:**

GE gear motor line, 9/30, p.57  
 Iron-base electrode hard facing  
 boosts gear life, 12/30, p.70  
 Mannesmann tube mill-gear drives,  
 8/12, p.150

**General Services Adm.:**

Aluminum stockpiles studied, 8/5,  
 p.62  
 Aluminum supply contracts re-  
 vised, 9/23, p.73  
 Magnesium plants still unsold,  
 7/22, p.161  
 Magnesium plant at Painesville  
 auction, 8/26, p.126  
 Nicaro nickel plant, sale outlook,  
 10/14, p.72  
 Nicaro sale campaign, 12/2, p.59

**Geographical Centers:**

Steelmaking—eastern dist., Phila-  
 delphia, 12/2, p.55  
 Steelmaking, Ohio, 10/7, p.130

**Germany:**

1958 outlook: U.S.-German firms  
 form business ties, 12/16, p.71

**Glass:**

Liners lubricate bearings, Teflon  
 and glass fibers, 9/9, p.110  
 Ingot heat, liquid glass, TO, 12/2,  
 p.93  
 Tools glass coated, TO, 9/23, p.117  
 What glass can offer metal, coat-  
 ings and linings, 8/19, p.155

**Government:**

Antitrust & Monopoly (Kefauver):  
 Auto price probe, 12/9, p.113  
 Metalworking industrial concen-  
 tration, 7/29, p.76  
 Steel price probe, inflation  
 charge, 7/22, p.57  
 Blough testifies, 8/19, p.110;  
 8/12, p.68  
 Blough defines inflation, 8/26,  
 p.39  
 Economist refutes inflation,  
 8/19, p.114  
 Atom power chief—Keirns, 12/2,  
 p.60  
 Atomic power-public power bill,  
 8/5, p.62  
 Basic research, recommendations,  
 11/4, p.72  
 BLS: What causes inflation? 8/5,  
 p.60  
 Budget, Congressional quarterly  
 report, 8/12, p.80  
 Defense budget (see Defense)  
 Defense Secretary McElroy tours  
 setup, 9/23, p.86  
 Economy: Budget hearings, 11/18,  
 p.109  
 FHA regulation changes, 8/12, p.77  
 Gaither report, 12/30, p.32  
 Hebert (Rep.) studies profits of  
 military aircraft engine makers  
 (GM, etc.), 7/29, p.65  
 Highway program, 7/1, p.40; 9/30,  
 p.52  
 ICC would rule on rail merger,  
 11/11, p.54  
 Inventors Council list, 10/28, p.113  
 Lead and zinc tariff hearings,  
 8/12, p.80  
 McClellan hearings: Four reforms  
 in labor, 12/9, p.107  
 Mills and Mahon, committee heads,  
 12/30, p.32  
 NLRB (see)  
 Missiles, separate service sought,  
 8/26, p.42  
 Pension controls hit by Tyson,  
 (U. S. Steel), 7/1, p.45  
 School bill status, 7/29, p.78  
 SIC manual revised, 8/5, p.65  
 Small business, tech. services,  
 11/11, p.104  
 Smathers (Sen.) small business  
 defense, 12/16, p.66  
 Taft-Hartley improvements: Hart-  
 ley interview, 9/16, p.123  
 Wilson replacements—rumored,  
 Quarles, 7/8, p.60; Randall,  
 7/22, p.52

**Gray Iron:**

Industry report, 10/7, p.129

**Gray Iron Founders' Society:**

Elects, B, 10/21, p.74  
 Gray iron uses, dev. through mar-  
 keting, 10/21, p.43

**Great Britain:**

1958 outlook, 12/23, p.45  
 Automotive earnings, 8/19, p.117  
 Foreign car market, 7/29, p.83  
 Steel saucer is antenna for radio  
 telescope, 12/23, p.45

**Grievances:**

How to cut grievances, 12/23, p.40

**Grinding, Polishing:**

Grinding costs shaved (expanding  
 mandrel), 9/30, p.82  
 Grinding fluid tests: Lubrication  
 more important than cooling,  
 7/15, p.127  
 Slab grinding costs cut with mech-  
 anization, 9/2, p.138  
 See Machine Tools & Attach.

**Guided Missiles: See Missiles****Gunning System: See Refractories****II****Hard Facing: See Welding (Arc)****Hardness:**

Boron deepens casting hardness,  
 10/21, p.83  
 Hardness test for chrome-plate in-  
 side cylinder, 8/26, p.88  
 Thin strip hardness can be mis-  
 leading, 7/1, p.86

**Hardware:**

Builders' hardware sales, 9/16,  
 p.89

**Heat Pumps:**

Southern sales, 7/29, p.72

**Heat Treating & Annealing:**

Alloy steel solves warping prob-  
 lem, 7/29, p.138  
 Annealing symposium (low carbon  
 steel), Case Inst., 8/5, p.100  
 Annealing symposium (prepared  
 atmospheres), Lee Wilson, 11/18,  
 p.160  
 Austempering is mechanized  
 (IBM), 9/23, p.125  
 Bethlehem: Lines anneal fast with-  
 out soaking, 10/14, p.124  
 Coding heat treating data (War-  
 ner & Swasey), 8/26, p.74  
 Die steels, how to avoid cracking,  
 9/30, p.79; 10/7, p.200  
 Ductile iron: How heat treatment  
 upgrades it, 9/16, p.132  
 How to get more from a spheroid-  
 izing furnace (controlled atmos-  
 phere rolling hearth furnace for  
 alloy steel tubing), 12/9, p.208  
 Magnetic quench test, 12/30, p.56  
 Modified martemp cuts warping,  
 12/2, p.97  
 Salt bath works four ways, 9/16,  
 p.135  
 Single stack annealing gets the  
 nod (Republic), 11/11, p.118  
 Tips on turning heat treated steels,  
 11/25, p.94  
 Vacuum heat treated hairsprings,  
 10/21, p.94  
 Vacuum heat treating takes hold,  
 7/15, p.108  
 Weirton annealing line, 10/7, p.170  
 See Induction Heating

**Heating & Cooling Coil Manufac-  
turers Assn.:**

Elects president, B, 8/5, p.84

**Heavy Presses: See Air Force****Hiring:**

1965 job outlook, oldsters pros-  
 pects, 11/4, p.77

**Honeycombs:**

Look what's happening to honey-  
 combs (plymetal): Three basic  
 cores, 10/14, p.116  
 Northrop freezes honeycombs dur-  
 ing machining, 8/12, p.136

**Housing:**

Alcoa conference, revolution in  
 home building, 7/8, p.48  
 FHA changes aid housing, 8/12,  
 p.77

**Hydrogen:**

Hydrogen control in titanium, 7/1,  
 p.82

**I****Illinois Institute of Technology:**

Armour survey, Brazilian ore,  
 12/2, p.48

**Illinois Manufacturers' Assn.:**

Elects, 11/25, p.88

**Incentive Programs:**

Automatic Valve sales contest,  
 8/19, p.112  
 Pitney-Bowes employee suggestion  
 system, 7/15, p.58

**Induction Heating:**

Hydrogen control in titanium, 7/1,  
 p.82  
 Used to harden auto shock ab-  
 sorber shafts, 12/9, p.128

**Industrial Concentration:**

Concentration: What's the score  
 for metalworking? 7/29, p.76

**Industrial Conveyors:**

Sales, industry report, 12/16, p.61

**Industrial Development: See Area  
Dev.****Industrial Diamonds:**

Diamond market active, industry  
 report, 8/12, p.75  
 GE manmade diamonds, 11/11,  
 p.69

**Industrial Heating Equipment  
Assn.:**

Elects exec. v. p., 10/7, p.152

**Industrial Production Index:**

FRB index, 11/25, p.54

**Industrial Relations:**

Attitude survey (Bell & Howell),  
 12/9, p.116  
 Attitude survey (Clark Equip-  
 ment), 9/16, p.125  
 Building Management Co-op (Re-  
 public Steel with Univ. of  
 Chicago): Junior brass attend  
 class, 12/16, p.64  
 College-industry conference table  
 (Warner & Swasey), 7/22, p.68  
 Dealing with workers, 9/16, p.119  
 How to cut grievances, 12/23, p.40  
 Suggestion system, employees,  
 7/15, p.58

**Infiltration: See Powder Metallurgy****Inflation:**

Anderson (Sec'y-Treasury) views,  
 9/23, p.86  
 Auto-steel price probes (see  
 Gov't antitrust)  
 Inflation charged steel industry  
 (Kefauver), 7/22, p.57  
 Inflation defined by Blough, 8/26,  
 p.39  
 Price rise tied to wages and pro-  
 ductivity, 9/30, p.45  
 New spirals predicted, 10/7, p.124  
 What causes inflation? 8/5, p.60

**Inspection, Testing:**

A way to speed analysis: Foundry  
 x-ray spectrometer, 12/9, p.156  
 AEC unveils ETR, test reactor,  
 10/7, p.166  
 Cameras (see Photography)  
 Cylinder block machine inspects  
 rejects, 8/12, p.130  
 GM—(PSUI) tests engine balance,  
 8/19, p.180  
 Hardness testing inside chrome-  
 plated cylinders, 8/26, p.88  
 Gamma ray for castings, TO,  
 12/23, p.65  
 Hydrogen control in titanium (vac-  
 uum fusion gas analysis), 7/1,  
 p.82  
 Lab organization for complex  
 tubing specs, 11/18, p.208  
 Lab (clinic) checks castings by  
 night, treats patients by day,  
 11/11, p.116  
 Medical tools (Eder Instrument)  
 used for testing, 7/22, p.62  
 New way to find hot spots (Evap-  
 orograph instrument), 8/12,  
 p.134  
 pH controls for bright dip proc-  
 ess, 12/9, p.203  
 Plating machine mockup, 8/26,  
 p.38  
 Porosimeter, analyzes pore struc-  
 ture, TO, 7/1, p.65  
 Pretesting new products with cus-  
 tomers, 11/11, p.70  
 Quenching test—magnetic, 12/30,  
 p.56  
 Quenching speed tester, TO, 12/9,  
 p.155  
 Scrap analysis (clinic) at Electric  
 Steel Foundry, 11/18, p.112  
 Spectroanalysis analysis, U. S.  
 Steel, TO, 7/15, p.103  
 Selecting coils electronically for  
 fasteners (Brush Metal Moni-  
 tor), 8/19, p.164

Test reduces overdesign problem  
 (impact properties of slow  
 quenched steels), 10/7, p.184  
 See Aircraft  
 See Gages  
 See Ultrasonics

**Institute of Sanitation Manag-  
ment:**

Industry report, 12/9, p.108

**Institute of Scrap Iron & Steel  
Inc.:**

Pittsburgh chapter elects, 12/9,  
 p.152  
 Scrap program, 12/9, p.108  
 Scrap, review of 1957, 12/30, p.3

**Instruments:**

See Inspection, Testing

**Instrument Society of America:**

Seminars discuss systems engineer-  
 ing, 9/16, p.84

**Insurance, Pensions:**

State jobless benefits up, 9/11,  
 p.74  
 Tyson (U. S. Steel) hits federal  
 control, 7/1, p.45

**Inventories:**

Components, 3rd quarter, 7/29,  
 p.99; 4th quarter, 11/4, p.65  
 Plates and structurals, 4th quar-  
 ter forecast, 8/5, p.137  
 Plates and structurals, 1st quar-  
 ter, 11/4, p.169  
 Steel inventories (buyers trimmin-  
 g stocks), 12/16, p.59

**Inventory Control:**

Aerial photos: Inventory aid (cob-  
 alt iron ore, limestone stockpiles),  
 9/16, p.85  
 Inventory chalkboard for steel  
 representatives at Rolled Steel,  
 12/23, p.39  
 Visual production control system  
 at Cleco, 8/12, p.127

**Investment Casting:**

Austenal Inc. uses vacuum, 11/2,  
 p.96  
 Industry report, 7/8, p.65

**Iron Ore:**

Aerial photo, inventory of iron ore  
 stockpiles, 9/16, p.85  
 Brazil ore found, 12/2, p.48  
 Canada (Ungava Bay): Eat-  
 ings forms international combin-  
 ing, 9/23, p.81  
 Columbia-Geneva leases Wyoming  
 project "Atlantic City", 7/7,  
 p.47  
 Direct reduction: The case for  
 10/28, p.180  
 Furnace makes strong taconite  
 pellets, 9/23, p.128  
 Kaiser lease, Panama, 12/2, p.10  
 Liberian veep hails Republic de-  
 velopment, 7/22, p.63  
 Loading at sintering plant ha-  
 dled by radar, 9/2, p.148  
 Self-unloaders, 9/9, p.91  
 Stocks and consumption statistics  
 for Oct., 12/16, p.155; for Sept.  
 11/11, p.178  
 Shipments (1957-1947), 12/11,  
 p.139  
 Shipments (1957), Lake Superior  
 and Canada, 12/9, p.235

**Isotopes: See Radiolotopes****Italy:**

Italian steel faces tests, 12/2,  
 p.47

**India:**

Machine tool program reported by  
 Merryweather, 8/12, p.74

**J****Japan:**

Flatware imports to U. S., 10/22,  
 p.39  
 Fuji Iron, U. S. steel orders, 8/2,  
 p.64  
 Japan needs atom, Westinghouse  
 official reports, 7/8, p.59  
 Picking line from B. F. Goodrich,  
 8/19, p.117

**Jet Engines: See Aircraft****Jigs, Fixture:**

Carbide pads improve life of skel-  
 eton soldering jigs, 11/25, p.10  
 Expanding mandrel aids grindin-  
 g, 9/30, p.82



Vacuum drill jig for riveting holes in aircraft skins, 11/18, p.178

#### Job Rating:

Profit saver: Compare job relationships, 10/28, p.121

#### Job Training:

AIFS: Job training for line supervisors, 7/29, p.107

#### Jobs:

Help wanted: 10 million more jobs by '65 (under age 45), 11/4, p.76

#### Joining:

Bearings joined—powdered metal with silver solder, 12/23, p.72  
New joining material (Intertec), 10/21, p.91  
Rotary swaging, 12/9, p.157  
Soldering aluminum with zinc base alloy, 12/2, p.119  
Space sheets joined by spotweld, 11/4, p.130

#### K

#### Knives:

Shearing knife, tips on care, selection of materials, 8/19, p.183

#### L

#### Labor:

AFL-CIO convention date, 10/14, p.60  
AFL-CIO seek new laws for '58, 11/4, p.59  
AFL-CIO seek short week for alum. workers, 7/1, p.27  
Alabama layoffs, 10/7, p.113  
Arbitration trend, grievance issues, 7/22, p.60  
Automation doubles employment, moonlighting practice of two jobs at once, 8/12, p.85  
Automation tied to Michigan jobless, 8/19, p.101  
Calif. compulsory unionism, country ordinance, 7/1, p.28  
California Metal Trades Assn., bargaining agent, 7/22, p.64  
Collective bargaining threatened: T-H changes pressed by Hartley, 9/16, p.123  
Craft union, 9/2, p.81  
Escalator clauses (see Wages)  
Factory workers, survey, 11/25, p.54  
Fringe benefits: Average hourly cost per employee (chart), 12/2, p.54  
IUE-GE may open contract, 8/5, p.50  
Labor contract package, 1962 outlook, 10/14, p.59  
Labor contracts, foremen make them work, 8/19, p.118  
Labor contracts, MESA limits locals to one year, 8/5, p.49  
Labor force, 1965 outlook, 11/4, p.76  
Labor force, survey, 11/25, p.54  
McClelland hearings, reforms in labor, 12/9, p.107  
McDonald denies irregularities in campaign, 8/19, p.101  
Older workers restricted, 11/4, p.76  
Rarick rebellion, 9/30, p.39  
Right-to-work law, Senate push, 9/23, p.73  
Steel contract expiration date, pattern bargaining sought, 7/22, p.51  
Strike loss, man-days, 7/29, p.66; 12/16, p.53  
Strikes, July low, 9/9, p.91  
Teamsters meet, 9/30, p.39  
Teamsters, AFL-CIO, ouster, 12/16, p.53  
Teamsters-Osco Steel dispute, 12/9, p.111  
UAW:  
'58 preview of union wants, 7/15, p.67  
'58 worries labor unions, strike outlook, 12/2, p.53  
Reuther price cutting proposal, 8/26, p.29; 9/2, p.81  
Short work week, 11/18, p.103; foot-in-door tech., 10/14, p.59  
Union dues for older-retired members, 8/5, p.50  
UAW vs decentralization, Monroe plant to Ga., 8/5, p.69  
Unfair labor charge (NLRB), 12/9, p.117  
Union dues up, 12/23, p.30  
Unions: Should they be regulated (financial), 8/5, p.57

Whitcollar drive, 10/14, p.59  
Workmen's compensation laws, 7/15, p.65

#### Labs: See Inspection, Testing

#### Latin America: See South America

#### Leaded Steels:

Fatigue strengths studied, TO, 12/9, p.155

#### Leisure:

Market for metals, 7/29, p.71

#### Licensing:

U. S. - German licensing, 12/16, p.71

#### Linings:

Liners lubricate bearings (Teflon and glass fibers), 9/9, p.110  
What glass can offer metal, 8/19, p.155

#### Lithium:

Aluminum-lithium, new jet alloy, 10/7, p.125

#### Loans:

Export-Import Bank loans, 7/29, p.83  
How to get a small loan, 8/26, p.40  
Interest rate high, 9/2, p.81

#### Locks:

Builders' hardware sales, 9/16, p.89

#### Lubricants, Lubrication:

Case for molybdenum disulfide (Intern'l Harvester), 12/30, p.68  
Choose the right lubricant, Part 1, 10/14, p.132; Part 2, 10/21, p.100  
Free piston oil, TO, 8/12, p.123  
Grinding fluid tests (Mellon Inst.), 7/15, p.127  
Liners lubricate bearings (Teflon and glass fibers), 9/9, p.110  
Subzero coolant for machining at Douglas, 8/5, p.94

#### M

#### Machine Shops:

Automation for small shop, binary code tape control, 10/28, p.131  
More work for welding positioners, 12/16, p.120

#### Machine Tool Industry:

Cincinnati Milling seminar features new drill, numerical control unit, electrodischarge machining, 10/21, p.91  
Coding heat treating data (turret lathes), 8/26, p.74  
Defense sale—industrial facilities, 7/1, p.76  
Detroit programs slow, 10/21, p.91  
How to get more from machine tools (insert), 9/23, p.119  
NMTBA meeting, officers, 10/28, p.120  
Numerical controls (see)  
Price tags on equipment (employees view), 9/23, p.82  
Sales, order outlook, builders spike slump rumors, 7/29, p.118  
Orders, shipments down, 12/2, p.47  
Selling, direct or distributors, 11/4, p.130  
Standardized tools—building block concept:  
Ford reports to Pentagon, 11/4, p.67 and p.130  
Le Maire 5-yr program, 12/30, p.61  
Tool builders reject, 12/30, p.20  
Used machine tool sales, 11/4, p.69

#### Machine Tools & Attachments:

Automatic machine cuts out bad cylinder blocks, 8/12, p.130  
Boring machines with two independent stations (auto plant), 7/22, p.102  
Boring setup, Ford Sterling plant, 10/7, p.174  
Contour cutter, pipe ends, 10/21, p.102  
Contour cutter, aircraft shapes from bar stocks, 11/18, p.188  
Drill press, one-operation, 12/2, p.116  
Drill spiral point, new design, 10/21, p.84  
Drill spiral point (Cincinnati Milling), 10/21, p.91

Jig borer picks its tools (numerical control), 12/16, p.119  
Jig borer tape control, 7/1, p.76  
Lathes automated for machining auto crankshafts, 11/11, p.114  
LeBlond lathes, skin steel pipe rolls, 7/8, p.115  
Mandrel expands for grinding, 9/30, p.82  
Milling machine "Variax" (Lockheed), 7/15, p.114  
Milling machine does variety of jobs on SeaMaster wing panels (Martin), 9/2, p.136  
Milling machine—tape control (Martin), 11/18, p.182  
Milling machine works five axes (Lockheed), 7/15, p.114  
Milling machine special for columns, 7/15, p.114  
Planer converted into three dimensional, tracer controlled milling machine, 12/2, p.118  
Recess tool cuts handling (Ford), 12/16, p.107  
Rotary machine for extruded bars, 10/21, p.91  
Surface grinder and fixtures machine clutch cones, 8/26, p.81  
Thread grinder solves size problem (Watervliet Arsenal), 7/29, p.116  
Throwaway cutters, new milling head, 9/23, p.140  
Tracer lathe cuts jet discs, 8/26, p.81

#### Machinery & Allied Products Institute:

Elects, B, 7/1, p.62

#### Machining:

Cadillac: Machine cuts out bad cylinder blocks, 8/12, p.130  
Chem-mill handles tough job (aircraft parts), 12/2, p.114  
Chem-milling, Lockheed, 12/2, p.100  
Chem-milling magnesium, 11/18, p.198  
Chrysler adopts spline rolling, 8/12, p.142  
Contour milling cuts airfoil shapes from bar stock, 11/18, p.188  
Crankshaft line with a new look at Pontiac, 11/11, p.114  
Drilling-chamfering flanged hubs, one operation, 12/2, p.116  
Electrolytic machining handles tough alloys, 12/9, p.196  
Gage goal: A tenth of a millionth of inch, 9/9, p.121  
Honeycombs at Northrup, freezing cores stops crumbling, 8/12, p.136  
Machine shops use welding positioners, 12/16, p.120  
Missile machining, a new industry, 8/12, p.118  
Pilot runs, machine tryouts, 12/16, p.105  
Recessing tool machines steel forging at Ford chassis parts plant, 12/16, p.107  
Surface grinder and fixtures finish clutch cone, 8/26, p.81  
Swagers point, form, assemble, 12/9, p.157  
Tape guides jet engine boring (GE), compressor housings, 12/2, p.112  
Thread grinder solves size problem: Watervliet Arsenal gage grinder, 7/29, p.116  
Tips on titanium milling, 10/7, p.176; 9/23, p.140  
Tips on turning heat treated steels, 11/25, p.94  
Ultrasonic machining gains, 10/14, p.122  
See Numerical Controls

#### Magnesium Assn.:

Convention papers progress report, 11/18, p.192

#### Magnetic Quench:

New way to measure, 12/30, p.56

#### Magnetic Steel:

Magnetic steel is doubly oriented, for electrical apparatus, 11/11, p.131; 10/28, p.113

#### Maintenance:

Reliance school for maintenance: Students learn electronics, 9/9, p.73  
Solving down time (see Replacement)

#### Make or Buy:

Management series, 10/14, p.105

#### Malleable Founders' Society:

Appointments, B, 7/22, p.90  
4th quarter outlook, 10/28, p.130

#### Management:

Appraisal counseling—how to be a better boss, 9/23, p.90  
Attitude survey (Bell & Howell): Give employees their say, 12/9, p.116  
Attitude survey (Clark Equipment): What do employees think of you, 9/16, p.125  
Corporate committees, survey, 11/4, p.60  
Executive earnings (see Salaries)  
Executive selection (NICB survey), 7/1, p.28  
Foremen, management's first line, 10/14, p.76  
Grievances, how to cut, 12/23, p.40  
Hiring methods, restricted to under age 45, 11/4, p.76  
Junior brass attend class (BMC program): Republic and Thompson Products, 12/16, p.64  
Labor contracts, add foremen to make them work, 8/19, p.118  
Management Series:  
Dealing with workers, 9/16, p.119  
Make or Buy, 10/14, p.105  
Producing for the new technology (atomics), 8/12, p.114  
Research—Threshold to the future, 7/15, p.93  
Small business, its place in our future, 11/11, p.99  
Marketing personnel needed, 8/5, p.66  
Operations research, 12/9, p.118  
Seniority costs, how to reduce, 7/8, p.58  
Supervisor shortages, 8/19, p.101  
Weirton talent pool, personnel inventory: This firm builds people, 11/25, p.70  
Young Spring & Wire's merger program, 8/12, p.83

#### Maps:

Barium steel plants, 9/9, p.67  
J&L plants, U. S., 8/12, p.171

#### Marketing:

Atomics, marketing to aid sales, 11/11, p.53  
Golden Anderson Valve, rejuvenation pays off, 11/4, p.75  
Growing the new markets, 12/2, p.65  
Needed: More marketers (personnel), 8/5, p.66

#### Marking:

Automatic marking semifinished steel at Republic slab mill, 11/25, p.100  
Color code for steel, 7/29, p.82

#### Material Handling Industry:

Adaptation pays off (bar storage racks) Diamond Chain, 12/9, p.119  
Alloy steel solves warping problem (pallets hold alum. coils during annealing), 7/29, p.138  
Cranes stretch warehouse space, (storage racks and stacking cranes), Leslie, 7/1, p.80  
Foundry improves cleaning (conveying system) Dalton, 7/8, p.114  
Handling equipment sales, 10/7, p.125  
Jacks and blocking replace gantry crane, Kelsey-Hayes, 9/9, p.136  
Loader speeds plating line (Eaton), 12/2, p.108  
Ore hopper cars at sintering plant handled by radar, 9/2, p.148  
Steel plant automates packaging (Wheeling), 7/8, p.112  
Technics take over (co-ordinating handling), Rapids - Standard, 10/28, p.125  
Timken integrates plant, 9/16, p.84  
Vacuum crane speeds mill output, Atlas Steels, 12/2, p.102  
What LPG trucks offer you, 7/15, p.104



**Material Handling Equipment:****Conveyors:**

Castings moved to cleaning unit: Dalton Foundries, 7/8, p.114  
Plating line conveyor: Eaton Mfg., 12/2, p.108  
Rubber belt moves hot sand at foundry: I-F Mfg., 9/23, p.130  
Timken shipping center, IBM controls chain floor conveyors, 9/16, p.84

**Cranes & Hoists:**

Vacuum crane handles sheets, Atlas Steels, 12/2, p.102  
Warehouse racks and stacking cranes, Leslie Ltd., 7/1, p.80

**Trucks, Gas & Electric:**

Autocar trucks (J&L) move steel from rolling mill, 8/5, p.107  
Chock-pulling lift truck in roll shop, pic., 7/29, p.126  
What LPG trucks offer you, 7/15, p.104

**Material Handling Institute:**

Elects president, 12/16, p.62

**Mechanics Educational Society of America:**

Restricts contracts for one year, 8/5, p.49

**Mellon Institute:**

Grinding fluids: Lube more important than cooling, 7/15, p.127

**Melting: See Vacuum****Mercury:**

U. S. mercury ore reserves, 8/26, p.45

**Mergers:**

American Metal Ltd. - Crucible, 11/25, p.87  
Bethlehem - Youngstown, merger reasons given, 9/23, p.79  
Bethlehem - Youngstown hearings start, 11/4, p.59  
Carpenter - Northeastern Steel, 12/2, p.81  
Case - American Tractor, 10/21, p.47  
Copperweld-Superior Steel, 9/2, p.91; 11/18, p.137  
J & L-Cold Metal, 7/15, p.88  
Merger rate steady, 7/22, p.58  
Pfaudler-Permutit, 10/14, p.98  
United Drill-Greenfield Tap & Die, 12/16, p.92  
Universal-Cyclops, Empire Steel, Reeves Steel, 12/9, p.141  
Young Spring & Wire diversification pays off, 8/12, p.83

**Metal Building Manufacturers Assn.:**

Malcom heads, 12/9, p.152

**Metal Cleaning: See Pickling****Metal Manufacturers' Assn.:**

Sparks, secy., retires, 7/1, p.62

**Metal Selectors:**

1957 metal selector (insert), 10/28, p.169  
Brazing alloy selector, 10/7, p.162

**Metallurgy:**

A new stainless (boron clad) for atomic energy, 9/9, p.104  
Armco: New steel for hot aircraft, 9/23, p.138  
ASM report: Researchers develop better metals, 12/30, p.52  
Brazing alloy selector, 10/7, p.162  
How to avoid trouble with stainless welds, 7/1, p.70  
Clue to stronger steel (micro-structure), GE lab, 11/25, p.98  
How to give powdered metal's strength (infiltration), 11/25, p.110  
How to upgrade cold-finished steel, 12/23, p.66  
Hydrogen control in titanium (embrittlement check), 7/1, p.82  
Hydrogen embrittlement, how to avoid with cadmium plating, 11/11, p.132  
Metalworking tomorrow: Air Force officer sums up metal requirements for supersonic-missile use, 10/14, p.138  
Mischmetal, additive for rare earths, 9/9, p.112  
New materials based on inter-metallic compounds to aid heat barrier, TO, 12/30, p.55  
Producing for the new technology, 8/12, p.113  
Rare metals scoreboard, 7/1, p.44

Thin strip hardness can be misleading, 7/1, p.86

Trends in metals—stainless steels, 11/4, p.107

**Metalworking:**

1st half profits, 8/5, p.55  
3rd quarter profits, 10/28, p.119  
1957-midyear report of business expectations, 7/1, p.33  
1958 outlook (editorial), 11/18, p.107  
Census SIC revised, metalworking markets, 8/5, p.65  
Concentration: What's the score for metalworking? (Kefauver study), 7/29, p.76  
Leisure: Market for metals, 7/29, p.71  
New York markets, 10/21, p.32  
Prices affecting metalworking: Components, 9/30, p.50  
Equipment, 10/7, p.122  
Construction, 10/14, p.67  
Consumer goods, 10/21, p.37  
Pricing reaction to midyear steel and wage increases, 7/15, p.53

**Methods Analysis:**

Electric Steel Foundry clinic, 11/18, p.112

**Michigan Employment Security Commission:**

Studies automation, jobs, 8/19, p.101

**Miniaturization:**

Producing for the new technology, 8/12, p.113

**Mines:**

Arctic mineral search, 9/2, p.82  
Inco expands in Canada, Manitoba, 10/28, p.124  
Mining uses more metals, mechanized coal machines, 5/20, p.97  
See Iron Ore  
See Nickel

**Metal Show:**

Foreign representatives, 11/11, p.61  
Metal show section, 10/28, p.161  
What's new in metals, cross section of ASM papers, 11/4, p.133

**Metal Treating Institute:**

Elects, B, 11/25, p.88

**Metals: See Rare Earths****Metals Engineering Institute:**

Training supervisor, 12/23, p.63

**Missiles:**

Articles:  
Faster shift to missiles (Air Force), 7/1, p.38  
Missiles in quantity soon? Missile scoreboard (chart), 10/7, p.120  
Manhattan plan for space, 11/25, p.59  
ABMA Redstone, (Chrysler), 10/21, p.40  
AMRI, missile group, 10/14, p.72; reports, 10/28, p.113  
ARS, rocket society, 12/16, p.62  
Antimissile program, Zeus and Wizard, 12/23, p.42  
Atlas-ICBM fired, cost, 12/23, p.29; tested, 9/9, p.58  
Bell & Howell scoring pod, photographic record, 12/30, p.31  
Better welds for missile tanks, 9/16, p.136  
Defense views program, 10/21, p.44  
Government budget, 11/18, p.109; 11/25, p.59  
Government separate service sought, 8/26, p.42  
Inertial guidance systems (AC Spark Plug):  
Caserio speaks on vender markets, 11/25, p.63  
How to make missile parts, 11/25, p.64  
Missile design spurs titanium's growth, 7/29, p.148  
Missile machining, a new industry, 8/12, p.118  
Michigan missile center, 12/9, p.120  
Producing for the new technology, 8/12, p.115  
Production, how fast? 12/9, p.120  
Production problems, 12/23, p.29  
Titan speedup, 12/23, p.29  
Thiokol rocket plant, 10/21, p.31  
Triton (Navy) cancelled, surface-to-surface, 9/23, p.73  
See Satellites

**Molybdenum:**

Case for molybdenum disulfide (lubricant) International Harvester, 12/30, p.68  
Chemical baths, new cleaning method at Ryan Aero, 11/18, p.158  
How to weld molybdenum, 7/8, p.101  
Hot strength material, report, TO, 7/1, p.65  
Metal coating process, TO, 12/2, p.93

**Motion Pictures:**

Film checks accuracy of large parts at North American, 7/15, p.110  
How to finish steels, 9/16, p.158

**Motors & Generators:**

Fractional motor sales, 9/23, p.85  
GE gear motor and speed reducer lines, 9/30, p.57  
Integral electric motors, outlook, 9/2, p.87  
See Automotive

**N****National Association of Manufacturers:**

Business forecast for '58, survey, 12/16, p.60

**National Association of Sheet Metal Distributors:**

Elects, B, 11/11, p.90

**National Bureau of Standards:**

Test reduces overdesign problem in steels, 10/7, p.184

**National Electrical Manufacturers Assn.:**

Elects, 12/2, p.88  
Westinghouse (Cresap) plea for fair prices, 11/25, p.69

**National Foundry Assn.:**

Elects, 11/25, p.88

**National Industrial Conference Board:**

Christmas bonus survey, 12/9, p.108  
Labor force, survey, 11/25, p.54  
Moonlighting practice (two jobs at once) outgrowth of automation, short week, 8/12, p.85  
Selecting executives, survey, 7/1, p.28

**National Labor Relations Board:**

Cases filed since '53, 8/5, p.50  
Unfair labor charges, 12/9, p.117

**National Lubricating Grease Institute:**

Elects president, 11/18, p.142

**National Machine Tool Builders' Assn.:**

Meeting, elections, 10/28, p.120

**National Science Foundation:**

Basic research report, 11/4, p.72

**National Screw Machine Products Assn.:**

Ways to stop costly extras (standardized estimates), 7/15, p.57

**National Security Industrial Assn.:**

Defense study shows lack of planning, 8/5, p.57

**National Tool & Die Manufacturers Assn.:**

Elects, B, 11/11, p.92  
Meeting report, 11/11, p.54

**New Products: See Product Development****New York:**

Metalworking markets, 10/21, p.32

**Nickel:**

Nicar, Cuba plant, GSA sale campaign, 12/2, p.59  
Nickel plating (sulfamate bath) is stress-free, 9/30, p.78  
Manitoba deposits (Inco), 10/26, p.124  
Oregon deposits, 10/14, p.60  
Sunbolv: Plenty of nickel now, 12/23, p.35

**Noise:**

How to control plant noises, 8/12, p.138

**Numerical Controls:**

AIA: Tracer-tape control shines in test, 9/23, p.140  
Automation for small machine shop (Kaukauna Div.)—binary code tape control, 10/28, p.131  
GE-Eventdale plant: Tape guides jet engine boring, 12/2, p.112  
GE pre-engineered, control package, 9/23, p.140  
Jig borer control turns out side frames for IBM data processing equipment, 12/16, p.119  
Jig borer tape control (Fosdick), 7/1, p.76; 12/16, p.119  
Making tape control work, (Martin milling machine), 11/18, p.182

**Nylon:**

Nylon screws, TO, 8/12, p.123

**O****Office Equipment Manufacturers Institute:**

Elects president, 11/18, p.142

**Office of Defense Mobilization:**

Hughes, asst. dir.-production, 10/28, p.126  
JCS war plans, what to expect, 11/11, p.66  
Machine tool funds asked, 8/5, p.62  
Machine tool program made uniform, 10/7, p.126  
Standardized machine tools? 11/4, p.67  
Stockpiling program, 11/11, p.66  
Study points up lack of planning, 8/5, p.57  
See Amortization

**Offices:**

Office conveyor equipment needed, 12/2, p.47

**Ohio State University:**

Weld testing report, 12/30, p.61

**Oil & Gas Industry:**

Oil field equipment, industry report, 12/9, p.123  
Shipments of finished steel products, 12/9, p.238

**Openhearts:**

Heat over checkers speeds light-up, 8/19, p.158  
Refractory gunning repair, 10/21, p.88

**Operations Research:**

Management use, 12/9, p.118

**Orders, Inventories: See Inventory Control****Orientation:**

Magnetic steel (Westinghouse) doubly oriented, 11/11, p.131

**Outdoor Motors:**

Market for metals, 7/29, p.71; 9/2, p.88  
Pleasure boats in use—'57, 12/30, p.37

**Oxygen:**

Industrial consumption, 7/15, p.55  
Oxygen converter installations, now in use, 9/16, p.79  
Steel refining & smelting: When to use (air, ore and pure oxygen), 7/15, p.112  
Oxygen supply high, 12/30, p.30

**P****Packaging, Containers:**

Gas-chemical containers, National Tube, 9/16, p.90  
Making packages better, cheaper, (Wolverine Tube), 12/23, p.80  
Steel plant automates packing (Wheeling strapping), 7/8, p.112

**Part Makers:**

A look ahead at part making (automotive), 7/29, p.112  
Swaging cuts costs, 12/9, p.157

**Pattern Bargaining: See Labor**



- Pelletizing:**  
Furnace makes strong taconite pellets, 9/23, p.128
- Pennsylvania Ceramics Assn.:**  
Elects, B, 10/28, p.158
- Pensions, Insurance:**  
Fringe benefits, cost per employee, 12/2, p.54  
OASI payments (over age 65), 11/18, p.113  
States control funds, 9/9, p.57  
See SUB
- Personnel Inventory:**  
Weirton talent pool, 11/25, p.70
- Philadelphia:**  
Steelmaking center, eastern district, 12/2, p.55  
Steel representatives club, 12/2, p.89
- Photoetching:**  
Photoetching forms thin parts, 11/18, p.153
- Photography:**  
Aerial photos: Coal, iron ore stockpiles, 9/16, p.85  
Bell & Howell's missile scoring pod, 12/30, p.31  
Camera detects hot spots (Barnes infrared), 11/18, p.157  
Camera films template production (Convair), 11/18, p.81  
Ceramic cutting tools: Photomicrographs show deposits on edges, 10/7, p.168  
Evaporograph—built in camera: New way to find hot spots, 8/12, p.134  
Photographic equipment, report, 9/9, p.58
- Pickling:**  
New method cleans moly (Ryan Aero.), dip process, 11/18, p.158  
Pickling stainless to remove scale, 11/25, p.103
- Pig Iron:**  
Record production set, 12/16, p.137
- Pilot Plants:**  
Pilot runs up your odds (on new products), 12/16, p.102
- Pipe, Tubing, Fittings:**  
Aluminum pipe fittings for reactor, TO, 9/9, p.103  
Aluminum pipe coated, TO, 12/23, p.65  
Cutter for pipe ends, 10/21, p.102  
Seamless tubing with mirrorlike interior finish, "Lustraloy," 12/16, p.114  
Skinning pipe rolls, 7/8, p.115  
Tube specs, lab organization, 11/18, p.208  
Tubing resistance welder, Republic, 10/21, p.86  
Welded clad pipe, TO, 12/30, p.55  
Welded tubing, 12/23, p.76  
Welded zirconium tubing, 10/21, p.80  
Wire and tube product fabrications: Ideas for difficult jobs, 9/9, p.130
- Pipe & Tube Mills:**  
Chase Brass:  
Tubing line cuts costs, ups quality (continuous), 9/9, p.125  
New mill ups tube production (drawbench), 11/18, p.214  
Tube mill installation, 11/11, p.87  
J&L opens Aliquippa plant, 9/9, p.91  
Beloit Eastern: Skinning pipe rolls, 7/8, p.115  
Mannesmann: Latest work in tube mills (Soo), 7/8, p.104  
Mannesmann gear drives, 8/12, p.150  
Ohio Seamless: How to get more from a spheroidizing furnace, 12/9, p.208  
Welland Tubes Ltd.—'big inch' pipe, 7/8, p.106
- Pipelines:**  
Case history on cathodic protection, underground piping, 8/12, p.128
- Little big inch pipeline (petroleum products) Seymour, Ind. to Chicago, 7/15, p.63  
Pipelines for solid materials (American Gilsonite), 7/1, p.37
- Plant Design:**  
Westinghouse-Sandusky: Plant design is flexible, 8/5, p.110
- Plant Expansions:**  
Acme Steel, 7/29, p.73  
Admiral retools, 12/9, p.118  
Alcoa, Davenport, Iowa, aluminum rolling mill, 7/22, p.59  
Aluminum fabricators, 8/12, p.101  
B-W's Calumet Div., 11/25, p.62  
Barium, integrated mill, 9/9, p.67  
Bethlehem, Lackawanna plant, 7/22, p.85  
Bishop & Co., 7/15, p.82  
Caterpillar engine plant, 9/2, p.90  
Chrysler stamping, Twinsburg, 11/11, p.137  
Finished steel facilities: St. Lawrence Steel, Tygart Steel, 7/15, p.81  
Ford carburetor facility, 12/2, p.67  
General Steel Castings, Avonmore, Pa., 7/8, p.81  
Inland Steel, Indiana, 8/19, p.113  
J&L capacity, map, 8/12, p.171  
J&L cold reducing mill, Cleveland, 12/23, p.38  
J&L electricweld line mill, 9/9, p.91  
Kaiser Steel expands to meet future, 7/29, p.165  
Makepeace Co., 8/26, p.45  
National Carbon program finished, 8/26, p.41  
Republic-Cleveland plant, 12/23, p.38  
Republic-Culvert Div., Indiana, 8/19, p.113  
U. S. Steel Duquesne rolling mills, 8/5, p.83  
Weirton: Expansion accents productivity, 10/7, p.170  
Westinghouse, 8/5, p.84  
Wheeling Steel: Replacing tin plate mill, 11/4, p.124  
Youngstown Indiana Harbor Works, facilities, 8/12, p.78
- Plant Locations:**  
See Area Development  
See Maps
- Plant Operation: See Automation**
- Plate Stretchers:**  
Plate stretcher tooled for maximum opening, 12/23, p.77  
Plate stretcher (Kaiser), 9/23, p.107
- Plates: See Structural, Plates**
- Plating: See Electroplating, Plating**
- Plating Machines:**  
Testing and development mock-up, "Tadmu" at Wagner, 8/26, p.38
- Plumbing Brass Institute:**  
Elects, 12/9, p.152
- Point-of-Purchase Advertising Institute:**  
Executive director, 8/26, p.64
- Poland:**  
Car output, prices, 12/9, p.128
- Porcelain Enamel:**  
Porcelain on aluminum use, 7/22, p.69
- Positioners: See Welding**
- Powder Metallurgy:**  
Automotive consumption—powdered parts, 9/23, p.93  
Bigger powdered bearings (joined with silver solder), 12/23, p.72  
How to give powdered metals strength (infiltration), 11/25, p.110  
Powdered aluminum for hot uses (Alcoa), 8/5, p.107  
Welding rod iron powder coatings, 12/9, p.180
- Powder Metallurgy Parts Manufacturers Assn.:**  
Elects, 11/4, p.100  
Automotive consumption—powdered
- Power (Mechanical):**  
Gear drives, Mannesmann tube mill, 8/12, p.151  
See Automotive
- Power Mowers:**  
Sales, 7/8, p.48
- Precipitators:**  
Auto scrapyard burner uses electrostatic precipitator, 12/30, p.30  
Electrostatic precipitators trap smog (Kaiser), 12/30, p.37
- Prefabricated Home Manufacturers' Inst.:**  
Meeting report, 10/28, p.114
- Pressed Metal Institute:**  
Elects, B, 11/4, p.100
- Presses:**  
Compacts have even density (Stokes), 12/16, p.116  
Die changing quick on Danly press, 7/29, p.75  
Extrusion press with interlocked controls (Revere), 8/5, p.104  
Hydroform press: Complex shapes at bargain rates, 8/12, p.124  
Inclined press speed-up foreseen, TO, 7/1, p.65  
Presses cut forging costs (Air Force landing gear parts), 9/9, p.118  
Stretch press for jet wing panels, 9/2, p.130  
Stretch formers (Cyril Bath), TO, 9/23, p.117; 7/29, p.111  
Stretch former (Kaiser plate), 9/23, p.107  
Triple-action press, Ford Chicago plant, 8/19, p.167  
Versatile presses cut setup time, 7/15, p.116
- Pressure Vessels:**  
Atomic welds, checklist, 11/25, p.92  
Gas and chemical containers (National Tube), 9/16, p.90
- Prices:**  
Castings, labor costs up prices, 8/26, p.39  
Consumer goods, 10/21, p.37  
Electrical equipment 'fair' price, 11/25, p.69  
Equipment, 10/7 p.122  
Export steel prices rise, 9/2, p.188  
Metalworking (see)  
Prices rise when wages outrun productivity, 9/30, p.45; 8/5, p.61  
Price spirals predicted by Dr. Clague (BLS), 10/7, p.124  
Refractory, 7/15, p.159  
Standard seamless pipe, export prices, 12/9, p.238  
Steel increase \$6: Increases on selected steel products; U. S. Steel prices, 7/8, p.53 and 54  
Tin plate, 11/18, p.243  
Vacuum melted alloys, 7/22, p.139
- Pricing Probe (Kefauver):**  
See Government (Antitrust)
- Printed Circuit Panels:**  
Assembly (electronic parts) by punched card, 9/16, p.144  
Automatic riveting speeded by TV system, Douglas Aircraft, 11/18, p.152
- Product Development:**  
Add incentive to research: Stewart-Warner, 5/20, p.100  
Automated equipment sales, 8/12, p.68  
Growing the new products (DeVilbiss), 12/2, p.64  
Management Series: Research and development—threshold to the future, 7/15, p.93  
Pretesting new products with customers, 11/11, p.70  
Pilot runs—up your odds, 12/16, p.102  
Producing for new technology, 8/12, p.113  
When to drop a product, 11/18, p.121
- Production:**  
Nickel, 12/23, p.35  
Pig, iron sets record, 12/16, p.137  
Stainless producers and what they make (chart), 11/4, p.108
- Steel (Europe), 1st quarter, 7/22, p.63  
Steel: Record consumption outruns production in '57, 10/21, p.113  
Steel: Steel stocks to skid more, 12/16, p.59  
Steel ingot (table), 7/22, p.153; 8/19, p.242; 9/23, p.162; 10/21, p.179; 12/23, p.96  
Steel ingots, '58 estimates, 12/9, p.107; 12/30, p.19  
Steel, West Coast, 11/18, p.113  
Titanium mill products, 7/29, p.152  
Visual production control, production and job location, 8/12, p.127
- Production Control:**  
Visual production control, 8/12, p.127
- Production Processes:**  
Aluminum diecastings, reasons for growth, 8/5, p.89  
Autos: A look ahead at part making, 7/29, p.112  
Blower wheel production at Chrysler-Airtemp, 7/15, p.124  
Cutting stock preparation costs (integrated line) at Cleveland Cap Screw, 12/9, p.192  
Frigidaire makes cabinet in 38 seconds, 8/19, p.194  
Honeycomb-lymetals, production methods, 10/14, p.116  
Ideas for difficult jobs: Fabrications of wire and tube products, 9/9, p.130  
Lockheed tech. for F-104A Starfighter, 12/2, p.100  
Missile guidance systems at AC Spark Plug, 11/25, p.64  
Photoetching forms thin parts, 11/18, p.153  
Pilot runs—up your odds, 12/16, p.103  
Rolls force precision parts, 7/8, p.97  
Spinning keeps pace with new technology, 9/2, p.131  
Swagers point, form, assembly (part makers), 12/9, p.157  
See Automation
- Productivity:**  
BLS report on productivity in manufacturing: What causes inflation?, 8/5, p.60  
Prices rise when wages outrun productivity, 9/30, p.45
- Public Relations:**  
See Industrial Relations
- Punched Cards:**  
Assembly of electronic parts on printed circuit panels, 9/16, p.144
- Purchase Analysis:**  
Cleveland Graphite: Purchase analysis in action, 7/8, p.63
- Purchasing Agents:**  
Chicago report, 12/16, p.53  
PAS see components price hikes continuing, 9/30, p.50  
New York elections, 7/8, p.91
- Q
- Quenching:**  
NBS test reduces overdesign problems, boom to fabricators of thick sections of steel, 10/7, p.184  
New way to measure quenching speed, 12/30, p.56
- R
- Radio-Electronics-Television Manufacturers Assn.:**  
Changes name, 7/29, p.66
- Radio, Television:**  
Chart: Ten year outlook, 12/2, p.56  
Hi-fi equipment for metalworking, 8/26, p.37  
Radio net for NATO, 8/19, p.111  
Closed circuit:  
TV 'eyes' for tough jobs (Douglas riveting), 11/18, p.152  
TV eliminates spotwatcher (Ryan), 7/15, p.119  
TV aids (Alcoa), TO, 7/29, p.111  
TV aids (GE) 3-dimensional color, TO, 7/29, p.111



**Radioisotopes:**

Isotopes: Big money saver (industry), 9/30, p.56

**Railroads:**

Buffalo R.R. Plants busy, 7/15, p.63  
Federal agency sought, 8/12, p.67  
Financing is chief problem, industry report, 11/18, p.120  
ICC would rule on merger of Pennsy and NYC, 11/11, p.54  
See Freight Cars, Freight Rates

**Rare Earths:**

More jobs open for rare earth additives, 9/9, p.112  
Scoreboard for 15 rare metals (status, prospects), 7/1, p.44

**Recovery Plants:**

U. S. Steel—Geneva Wks.: Waste gases turn profit, make ammonia, nitric acid and fertilizer, 8/12, p.132

**Recreation:**

American's annual spending, expands market, 7/29, p.71  
Leisure: Market for metals, 7/29, p.71

**Refineries:**

American Gilson coking and refining plant, 8/12, p.76  
Cuban American builds in La., 9/2, p.206  
Swiss steelmaker: When to use (air oxygen, ore oxygen, pure oxygen), 7/15, p.112  
Quebec Lithium builds, 12/16, p.90  
U. S. Steel—Geneva Wks.: Coal chemical recovery plant, 8/12, p.132

**Refractories:**

Gunning system repairs open hearths, 10/21, p.88  
Kaiser expands basic facilities, 8/12, p.136  
Refractory prices stable, inventories high, 7/15, p.159  
Republic's electrocast roof, TO, 11/11, p.109  
Self-lining, TO, 10/21, p.79  
Skewback twist for furnace roofs, 9/2, p.146

**Refractories Institute:**

President elected, B, 7/15, p.89

**Refrigerators:**

Frigidaire makes cabinets in 38 seconds, 8/19, p.194  
Spotwelder speeds assembly, 12/16, p.108

**Replacement:**

Mill changes break record, down time cut at slabbing mill, 7/22, p.108  
Welding solves down time problem (forging manipulator) ingots and slabs, 8/12, p.144

**Research:**

AMA survey: Operations research, 12/9, p.118  
Research—threshold to the future (Management Series), 7/15, p.93  
See Inspection & Testing

**Resistance Welding Alloy Assn.:**

Elects, B, 7/8, p.91

**Retirement:**

Editorial: Satire on retirement, 11/11, p.57

**Riveting:**

Closed circuit riveting (Douglas Aircraft), 11/18, p.152  
Vacuum drill rivets jet seaplane, 11/18, p.178

**Roads:**

Federal spending for acquisition, engineering, 11/25, p.74  
Highway program outlook, 7/1, p.40; 9/30, p.52; 11/18, p.104  
Inter-American Highway, 8/12, p.67

**Rockets: See Missiles****Roll Forging: See Forging****Roll Formed Products:**

Market for shapes grows, 10/28, p.259

**Roll Planishing:**

Planisher shaves weld costs (cold working a fusion weld in a water heater shell), 8/19, p.150

**Rolling Mills: See Steel Mills****Rotary Swaging:**

For forming-joining operations, 12/9, p.157

**Rotor Blades:**

Hard facing alloy extends life of parts, 7/1, p.72

**Rubber:**

'57: Industrial rubber's year, 7/29, p.74  
'58 outlook, 12/30, p.20

**Russia:**

Production report, 7/15, p.48  
Science grads, 12/2, p.47  
Sputnik V, 12/23, p.29  
Steelmaking gains, 12/30, p.27  
U. S. delegate reports Russian gains in hydroelectric and electrotechnology, 8/19, p.117  
Water transportation system, 9/2, p.82  
World metal supply, 12/9, p.258

**Rutile:**

Hobart produces, 9/2, p.97  
Metal & Thermit produces, 12/2, p.58

**S****St. Lawrence Seaway:**

Finished steel consumption, 10/7, p.114  
Pittsburgh-Erie canal? 11/4, p.60  
Seaway progress, 7/29, p.78; 9/16, p.82; 11/11, p.54

**Safety:**

CO safety stressed at Ford Steel div., 7/29, p.140

**Salaries:**

Average executive wage up, 12/23, p.39  
Executive earnings rise (metalworking): Average wage for chief exec. in light-heavy machinery, 11/11, p.63  
Highest paid industrialists (Kefauver hearings), 10/28, p.114

**Salesmen:**

Earnings, AMA report, 8/12, p.79

**Sales Programs:**

Airmatic Valve: Sales contest, 8/19, p.112  
Have enough salesmen? ABC's yardstick, 12/30, p.35  
Machine tools, direct sales of distributors? 11/4, p.130  
Steel inventory presented on chalkboard for representatives, 12/23, p.39

**Salt Bath:**

Salt bath works four ways (specialty mill), 9/16, p.138

**Satellites:**

Air Force claims space province, 12/9, p.120  
Army to build, 11/18, p.116  
Building the satellite's shell, 7/1, p.84  
Manhattan plan for space projects, 11/25, p.59  
Moon trips by '77?, 12/16, p.62  
Reynolds aluminum foil satellite, 10/14, p.69  
Satellite launcher holds Vanguard, 10/7, p.204  
Space program, who can direct?, 12/23, p.42  
Sputnik poses question, 10/14, p.68  
See Missiles

**Scientific Apparatus:**

Industry report, 9/9, p.66

**Scientists:**

Does Pentagon waste scientists' time? 11/18, p.116

**Scrap:**

BDSA report, 12/2, p.48  
Baler handles bulky scrap, 7/22, p.113

Ferrous scrap: '58 to match '57 (chart), 12/30, p.29  
For cleaner scrapyards: Smokatron auto burner uses electrostatic precipitation, 12/30, p.30  
Foundry scrap, methods analysis clinic, 11/18, p.112  
How much scrap do you produce? (metalworking plants) chart, 12/16, p.69  
ISIS program, 12/9, p.108  
Scrap and pig iron consumption, stocks, 12/23, p.109  
Shear cuts scrap, 11/4, p.70

**Screw Machine Products:**

Industry report, 12/16, p.79  
Ways to standardize estimates, stop costly extras, 7/15, p.57  
West Coast firms increase, 8/26, p.30

**Semiconductors: See Electric Equipment****Seniority Costs: See Management****Service Tools Institute:**

Elects president, 10/28, p.158

**Shapes:**

Market for shapes grows, cold-rolled, 10/28, p.259

**Shearing: See Cutting, Shearing****Sheet & Strip:**

4th quarter outlook, 9/30, p.103  
Annealing low carbon strip, prepared atmosphere, 11/18, p.160  
King-size sheets on way, result of sandwich rolling, 12/23, p.92  
Thin strip hardness can be misleading, 7/1, p.86  
Thin gage metals, TO, 8/12, p.123

**Shipments:**

Aluminum mill products, 12/30, p.78  
Bars, 4th quarter outlook, 9/2, p.183  
Finished steel setting record in '57, 10/21, p.113  
Finished steel products (tables), 7/29, p.172; 10/14, p.187; 12/16, p.163; 12/23, p.95; 12/30, p.79  
Iron ore, 11-years, 12/16, p.139  
Machine tools, 7/29, p.65  
Magnesium castings, 12/2, p.160  
Metalworking-industrial concentration: Chart, per cent of product shipments, 7/29, p.76  
Iron Ore, Lake Superior-Canada, 12/9, p.235  
Nonferrous casting, 12/2, p.137  
Steel mill (market groups and products), 1st half, 8/19, p.237; 1st nine months, 11/25, p.129  
Steel products, 9/16, p.196  
Structural mill shipments, 7/22, p.58

**Ships, Shipbuilding:**

Lykes Bros. contract, 8/12, p.68  
Merchant fleet ebbs, 9/9, p.68  
Merchant ship nuclear powered, contract, 12/23, p.30  
U. S. Steel ore carriers, 12/2, p.48

**Shot & Grit:**

Cast steel shot, industry report, 7/22, p.67  
Industry outlook, 7/22, p.67

**Shot Peening:**

Microscopic metal peening, wet blast, 12/16, p.106  
Shot peening, factors to consider in choosing an abrasive, 7/29, p.111

**Silicon Steel:**

Cubex, new Westinghouse magnetic steel easily magnetized, 11/11, p.131; 10/28, p.113  
Silicon steel: Growth ahead, 9/23, p.155

**Sintering:**

Industry report: Trend to sintering grows, 11/25, p.71  
French get two-layer sinter plant, 12/23, p.74  
Inland plant, 8/19, p.113  
Ore car handling with radar, 9/2, p.148  
Pug mill rotor blades hard-faced with alloy containing chrome borides, 7/1, p.72

**Slabbing Mills: See Steelmaking****Slitting Machines:**

Coil slitter, SPS automated line, 9/9, p.122

**Small Business:**

Basic problems studied, 9/23, p.74  
Defense contracts, Sen. Smathers' recommendations, 12/16, p.66  
FRB goals for study, 10/21, p.32  
How to get a small loan, 8/26, p.40  
Management Series: Small business, its place in our future, 11/11, p.99  
SBA loans, 8/19, p.111; 9/23, p.86  
Small steelmaker prospers (Jessop), 12/16, p.63

**Small Machine Shops:**

Binary code tape control, 10/28, p.131

**Smaller Manufacturers Council:**

Cox, president, 11/18, p.142

**Smelters:**

Canadian smelter, 9/2, p.90  
GSA auction at Painesville, 8/26, p.126

**Smoke-Smog:**

SAE studies L. A. smog, 9/9, p.77  
Smokeless scrapyard auto burner uses electrostatic precipitation, 12/30, p.30  
Electrostatic precipitators at Kaiser trap smog, 12/30, p.37

**Social Security:**

10 million now receive, 7/8, p.48  
20th birthday, 10/21, p.31

**Society of Automotive Engineers:**

Los Angeles smog study, 9/9, p.77

**Society of Mining Engineers:**

Elects president, B, 8/12, p.104  
12/23, p.63

**Society of Skilled Trades:**

Craftsmen seek union, 9/2, p.81

**Solar Energy:**

Auto power foreseen, 12/9, p.128  
Rep. Hosman seeks gov't aid for research, 8/26, p.42

**Soldering: See Joining****Solid Carbide Tool Institute:**

Formed, officers, B, 7/22, p.90  
Elects president, 11/25, p.88

**Sound:**

Douglas Aircraft: Sound 'sees' rejects before they happen, 7/1, p.66  
How to control plant noises, 8/12, p.138

**South America:**

Chilean group aided by Drexler (trade associations and practices), 12/2, p.55  
Latin American auto market, 9/2, p.101  
Venezuela integrated iron and steel plant, 7/29, p.81

**Specialization: See Company Operations****Specifications:**

Lab organization for complex specs, co-ordinating test reports at Superior Tube, 11/18, p.208

**Spinning:**

Metal spinning keeps pace with new technology, 9/2, p.131

**Spline Rolling:**

Chrysler adopts spline rolling, 8/12, p.142

**Springs:**

Aircraft springs, markets, 11/25, p.62  
Vacuum heat treating hairsprings, 10/21, p.94

**Stainless Steel:**

A new stainless for atomic energy (clad boron), 9/9, p.104  
Chart: Producers and what they make, 11/4, p.108  
How to avoid trouble with stainless welds, Part 2, 7/1, p.70  
New steel for hot aircraft: Armco's PH 15-7 Mo, 9/23, p.138



Pickling to remove scale, 11/25, p.103  
 Slag washed stainless steel, 9/30, p.86  
 Trends in metals, a special study, 11/4, p.107

**Stamping:**  
 Ford triple-action stamping press, 8/19, p.167  
 SPS automates stamping, coil slitter, etc., 9/9, p.122  
 Stamping plates to close tolerances, 8/26, p.72  
 Versatile (hydraulic) presses cut setup time, 7/15, p.116

**Standard Industrial Classification:**  
 Census SIC system revised, 8/5, p.65

**Standards:**  
 AISI weeds out alloys, new list, 10/14, p.181  
 NBS test reduces overdesign problem, 10/7, p.184  
 Steel: Color codes, 7/29, p.82

**Stanford Research Institute:**  
 Expands research center, B, 10/14, p.93

**Steel Industry:**  
 1st half comparisons, company earnings ('57-'56), 7/29, p.65  
 1st half profits, 8/5, p.55  
 3rd quarter profits, 10/28, p.119  
 Average age of steelworkers, 12/2, p.55  
 Antitrust hearings (see Government)  
 Bridge (Calif.) gets T-1 steel, 7/8, p.57  
 Cubex-magnetic steel doubly oriented for electrical equipment, 11/11, p.131; 10/28, p.113  
 European steel, 1st quarter comparisons, 7/22, p.63  
 Price increase \$6: Increases on selected steel products, 7/8, p.53  
 Russia gains in steelmaking, 12/30, p.27  
 Steel stocks to skid more (inventory report), 12/16, p.59  
 West Europe developments by 1960, 12/30, p.25  
 See Finished Steel  
 See Capacity  
 See Production  
 See Shipments

**Steel Club of Philadelphia:**  
 Organized, 12/2, p.88

**Steelmaking:**  
**Annealing:**  
 Lines anneal fast without soaking (Bethlehem tin plate mills, Sparrows Pt.), 10/14, p.124  
 Prepared annealing atmospheres (low carbon strip), 11/18, p.160  
 Single stack annealing gets the nod (Republic coil products), 11/11, p.118  
**Blast Furnace:**  
 Getting more iron from blast furnaces (National Steel), 12/9, p.164  
 Maintenance of equilibrium in blast furnace operation, 7/29, p.120; 8/5, p.96  
 Topping turbine for blowing, skims steam, 11/18, p.188  
 Chemical capping cuts drawing rejects at Ford, 8/26, p.76  
 Cold-finished steel, how to upgrade, 12/23, p.66  
 Clue to stronger steel, GE lab, 11/25, p.98  
 Direct reduction of iron ore, the case for, 10/28, p.180  
 Ductile iron moves in, 12/16, p.110  
 Expansion accents productivity (Weirton), 10/7, p.170  
 Ladle stirrer, TO, 9/9, p.103  
 Openhearth: Heat over checkers speeds light-up, 8/19, p.158  
 Openhearth repair: Refractory gunning system, 10/21, p.88  
 Ore pellet furnace makes product stronger, 9/23, p.128  
 Oxygen: J&L joins oxygen steel-makers (Alliquippa), 12/30, p.62  
 Oxygen: When to use (air oxygen, ore oxygen, pure oxygen), 7/15, p.112  
 Oxygen session, AISE, 10/14, p.126  
 Rare earth additives, more jobs open, 9/9, p.112  
 Rolling mill for tough steels (Latrobe), 12/2, p.99

Salt bath works four ways, 9/16, p.138  
 Sintering plant for French district, 12/23, p.74  
 Slabbing mill (Republic): Automatic marking semifinished steel by remote control, 11/25, p.100  
 Slabbing mill: Mechanization cuts slab grinding cost, 9/2, p.138  
 Slabbing mill replacements (Dofasco): Construction cuts downtime, 7/22, p.108  
 Slabbing mill replacements (Industrial Forge): Welding broken forging manipulator, 8/12, p.144  
 Slag washed stainless, pouring technique, 9/30, p.86  
 Sulfur and silicon lowered fast: Diamond Alkali reactor, 7/1, p.74  
 Tin plate mill rebuilding (Wheeling), 11/4, p.124  
 Tube mill, Mannesmann Tube Ltd., 7/8, p.104  
 Vacuum crane speeds mill output (Atlas Steels Sendzimir sheet mill), 12/2, p.102  
 Vacuum stream degassing takes hold, 12/23, p.70  
 Waste gases turn a profit (Geneva Wks.), makes ammonia, nitric acid, nitrate fertilizer, 8/12, p.132

**Steelmaking Centers:**  
 Ohio, 10/7, p.130  
 Philadelphia, 12/2, p.55

**Steel Mill Equipment:**  
 Industry report, 7/8, p.56; 9/16, p.79-81

**Steel Mill Products: See Shipments**

**Steel Mills:**  
 Barium builds integrated mill in N. J., 9/9, p.67  
 Iowa mill writeoff sought by North American, 8/5, p.62  
 J&L cold reducing mill—Cleve., 12/23, p.35  
 Latrobe: New mill (cogging) rolls tough steels, 12/2, p.99  
 Republic coke ovens, slabbing mill, 12/23, p.38  
 Venezuela iron and steel plant, 7/29, p.81  
 Weirton expansion accents productivity, 10/7, p.170  
 Youngstown Sheet & Tube, Indiana Harbor, 8/12, p.78

**Steel Shot:**  
 Cast steel shot outlook, 7/22, p.67

**Steel Wool:**  
 Industry report, 8/26, p.103

**Stockpiles:**  
 Aerial photos: Coal, iron, ore supplies, 9/9, p.85

**Stickpiling: See ODM**

**Stretch Formers: See Presses**

**Strip: See Sheet & Strip**

**Structurals, Plates:**  
 4th quarter inventory, buyers forecast, 8/5, p.137  
 1st quarter inventory, 11/4, p.169  
 Industry: Who's expanding, 7/8, p.129  
 Structurals, fabricators '58 outlook, 10/14, p.67  
 Structural shipments, 7/22, p.58

**Suggestion System: See Incentives**

**Supervisors: See Foremen**

**Supplementary Unemployment Benefits:**  
 Ford, UAW agree on plan, 10/7, p.134  
 Hassle looms over SUB, 8/26, p.35  
 Test case, Ohio, 9/16, p.73; 10/7, p.113 and 134  
 Test cases, Indiana, Pennsylvania, 11/4, p.59

**Surface Treatment:**  
 See Cleaning, Blasting  
 See Electroplating  
 See Deburring  
 See Finishes, Coatings, Paints  
 See Pickling  
 See Shot Peening

**Surveys:**  
 AAA: Trend in arbitration, 7/22, p.60

Business forecast for '58 (NAM), 12/16, p.60  
 Components, 4th quarter, 11/4, p.65  
 Bell & Howell: Employee attitudes, 12/9, p.116  
 D&B: Small business, 11/11, p.99  
 Engineer shortage: Deutsch & Shea, 11/18, p.115  
 Metalworking, midyear, 7/1, p.33  
 Plates and structurals, 8/5, p.137; 11/4, p.169  
 See American Management Assn.

**Swaging:**  
 Production ideas: Swagers point, form, assemble, 12/9, p.157

**Sweden:**  
 Foreign outlook, 12/9, p.125

**Systems Engineering:**  
 Seminar on instrumentation, 9/16, p.84

## T

**Talent Pools:**  
 This firm builds people (Weirton), 11/25, p.70

**Tape Controls: See Numerical Controls**

**Taxes:**  
 Bulletin F reform, 8/12, p.136

**Technology:**  
 Producing for the new technology, 8/12, p.113  
 Tech. revolution by 2000 A.D., 10/14, p.59

**Tin Plate:**  
 Coiling process for can plants, 9/2, p.81  
 Pricing policy, 11/18, p.243

**Titanium:**  
 Brazing methods, 7/22, p.103  
 Deburring at North American, 9/9, p.121  
 Drawability of titanium defined, 12/9, p.179  
 Hydrogen control in titanium (embrittlement checked), 7/1, p.82  
 Military market down, 7/1, p.27  
 Missile design spurs titanium's growth, 7/29, p.148  
 New markets for titanium: Civilian uses, 9/23, p.84  
 Tips on titanium milling, 10/7, p.176 and 9/23, p.140  
 Titanium production surges ahead (product mix changing), 7/29, p.152

**Tool Steels:**  
 How to avoid cracking die steels, 9/30, p.79; 10/7, p.200  
 Rolling steels on cogging mill, 12/2, p.99  
 Tips on turning heat treated steels, 11/25, p.94

**Tools & Dies:**  
 1957: Diemen expect good year, 8/12, p.73  
 Automotive prototype dies, zinc-alloy-plastic, 12/16, p.73  
 Drawing die, La Salle Steel, 12/23, p.69  
 Glass coated tools, TO, 9/23, p.117  
 Short run dies offer long life, 12/2, p.94  
 Steel rule dies catch on (blanking dies), 7/22, p.100  
 Thread inserts for holders of hot forging dies, 12/2, p.116

**Tools (Cutting):**  
 Carbides machine forged steel auto crankshafts, 11/11, p.114  
 Carbide pads aid life of silver soldering jigs, 11/25, p.107  
 Carbide squares can be turned, four cutting edges successively, 12/23, p.77  
 Contour cutter, oxyacetylene torch, for pipe ends, 10/21, p.102  
 Drill spiral point next step in drill evolution?, 10/21, p.84  
 Drill spiral point, Cincinnati Milling, 10/21, p.91  
 Guide to carbide tool geometry, 7/8, p.110  
 Photomicrographs show deposits on ceramic tools, 10/7, p.168  
 Throwaway cutters, new milling head, 9/23, p.140

## Toys:

Industry outlook, 12/9, p.108

## Trade Associations:

Doxsey (ASWA) aids Chilean group, 12/2, p.55  
 Aircraft Castings Assn. formed, 8/5, p.84

## Trade Shows:

Electronic Industries Assn. reports participation, costs, 9/9, p.68

## Training:

AFS: Job training for line supervisors, 7/29, p.107  
 Junior brass attend class (Republic), 12/16, p.64  
 Students learn electronics (Reliance school for customer service), 9/9, p.73  
 See Engineers

## Transistors:

Annual sales, 8/12, p.67

## Trucks, Trailers:

Mobile home trailers, output, 11/18, p.104

**Tube Mills: See Pipe & Tube Mills**

**Tubing: See Pipe, Tubing**

## Transportation:

2000 A. D. (Ford stylists depict methods), 8/26, p.47

## Tumbling:

Barrel finishing made simpler, 9/9, p.109

## Turbines:

Topping turbine for blast furnace blowing skims steam, Republic, 11/18, p.188

## U

## Ultrasonics:

Douglas Aircraft: Sound 'sees' rejects before they happen, 7/1, p.66  
 Machining gains, 10/14, p.122  
 Seminar: What's new, TO, 7/8, p.95

**Unemployment Benefits: See SUB**

**Unions: See Labor**

## United Engineering Center:

Planned for UN Plaza, 12/2, p.59

## University of Pittsburgh:

A new stainless for atomic energy: Dr. J. Alfred Berger, 9/9, p.104

## Uranium:

Firms merge, 9/2, p.82  
 Mill proposal, firms, 12/30, p.53  
 Producers, new mills, 9/2, p.93

## Used Machine Tools:

Industry report, 11/4, p.69

## V

## Vacuum:

Chart: Vacuum melt alloy producers, 7/22, p.137  
 Investment caster uses vacuum, 11/25, p.96  
 Martin Co.:  
 Vacuum brazing experiments, 7/8, p.81  
 Vacuum drilling jig, 11/18, p.178  
 Vacuum fusion gas analysis used for hydrogen control in titanium, 7/1, p.82  
 Vacuum crane speeds mill output, 12/2, p.102  
 Vacuum degassing, TO, 12/9, p.155  
 Vacuum gassing machine uses less CO, for cores, 9/2, p.150  
 Vacuum heat treating hairsprings, 10/21, p.94  
 Vacuum heat treating takes hold, 7/15, p.108  
 Vacuum plating cadmium, 9/9, p.134  
 Vacuum stream degassing takes hold, 12/23, p.70



**Valves:**

Choosing valve materials, 12/9, p.161  
 Ductile iron valves, TO, 8/19, p.149  
 Industry report, 12/2, p.63

**Venezuela:** See **South America**

**Vertical Turbine Pump Assn.:**

Elects, B, 11/18, p.142

**W****Wages:**

AFL-CIO wage settlements, 1st 6 mos., 8/26, p.29  
 AIC: Average increase since Jan. 7/4 cents, 9/30, p.39  
 AIC: Average increase for '58, outlook, 11/18, p.103  
 Auto demands may set pattern, 12/2, p.53  
 Average hourly rates for: Petroleum, blast furnace, rubber, railroad equipment and auto workers, 12/2, p.55  
 Building trades, 12/9, p.107  
 Escalator clauses hit, 12/2, p.60  
 Escalator clauses, steelworkers, 11/18, p.103  
 Escalator raise — steelworkers, 12/30, p.19  
 Europe's fringe, 10/14, p.60  
 Steel tied to price increase, 6/24, p.73  
 Steel, average pay rate, 8/26, p.41  
 Steel wages, near \$3, 9/16, p.90  
 Wage hikes in recessions, 12/9, p.107

**Warehouses:**

J&L expansions, 8/12, p.171  
 Cranes stretch warehouse space (Leslie Ltd.), 7/1, p.80

**Warehousing & Distribution:**

Figures talk to warehousemen: ASWA (chart) distribution cost analysis, 10/21, p.48  
 Steel mill shipments, 1st half, 8/19, p.237  
 Troubles with distribution: Independent seller vs manufacturer, 9/9, p.74

**Warping: See Heat Treating****Wastes:**

One system handles many wastes (Buick disposal plant), 9/16, p.146  
 pH controls rinse for bright dip unit (Leeds & Northrup), 12/9, p.263  
 Waste gases turn a profit (Geneva Wks.), 8/12, p.132

**Water Pumps:**

J&L installs, 12/2, p.58

**Weapons:**

Rifle—38 ounces, aluminum barrel, TO, 12/2, p.93

**Weatherstrip Research Institute:**

Elects, 12/23, p.63

**Welding (Arc):**

Better welds for missiles (consumable inserts insure x-ray welds in guided missile air tanks), 9/16, p.136  
 Hard surfacing a pug rotor blade, 7/1, p.72  
 Magnesium welded faster, 9/23, p.118  
 Molybdenum, how to weld, 7/8, p.101  
 Welding speeded with CO<sub>2</sub>: Midland Steel makes Chrysler frames, 7/1, p.43

Welded tubing spurs zirconium use, 10/21, p.80  
 Welding rod trends, iron powder coat, 12/9, p.180

**Welding (General):**

Atomic reactors welds (check-list), 11/25, p.92  
 Electrode quality depends on coating, 9/30, p.83  
 Expert views strap welds, 12/30, p.60  
 How to avoid trouble with stainless welds, Part 2, 7/1, p.70  
 How to weld molybdenum, 7/8, p.101  
 More work for welding positioners, 12/16, p.120  
 Planisher shaves weld costs (cold working fusion weld in water heater shell), 8/19, p.150  
 Weld testing, porosity report, 12/30, p.61  
 Welding heat, German research article, TO, 12/23, p.65  
 Welding solves down time problem, repairs broken part in large manipulator, 8/12, p.144

**Welding (Resistance):**

Republic tubing made by high frequency method, 10/21, p.86

**Welding (Spot):**

Double contour panels spotwelded automatically, 7/15, p.118  
 Portable spotwelder speeds assembly of refrigerator cabinets, 12/16, p.108  
 Spaced sheets joined by spotweld, 11/4, p.130

**Weldments:**

Abrasive blast cleans weldments, 12/23, p.78

**West Coast:**

California boom, steel production, 11/18, p.113

Electronics boom, 7/22, p.58  
 Metalworking firms dispute with machinists union, 7/22, p.64  
 More steel for West Coast (Kaiser expansions), 7/29, p.165

**Wind Tunnels:**

Wear plates, large bearings of joined powdered metal and silver solder, 12/23, p.72

**Wire:**

Cutting stock preparation costs (Cleveland Cap Screw), wire, for bolts, 12/9, p.193  
 Fabrications of wire and tube products: Ideas for difficult jobs, 9/9, p.130  
 Selecting coils electronically (for making fasteners), 8/19, p.164  
 Vacuum heat treating hairsprings, 10/21, p.94

**Wire Mill Products:**

Imports declining, 11/11, p.161

**Wire Reinforcement Institute:**

Elects, B, 8/19, p.146

**X****X-Ray:**

See **Inspection, Testing**

**Z****Zirconium:**

Industry outlook, producers boost capacity, 9/2, p.89  
 Welded tubing spurs zirconium use, 10/21, p.80



# COMPANY INDEX

## A

### ABC Machines Inc.:

Mythical company (salesmen supply), 12/30, p.35

### Abbey Etna Machine Co.:

Pipe cutter, IE, 12/16, p.123  
Tube mill, IE, 11/11, p.149

### Abrasive Machine Tool Co.:

Grinder—two rams reduce heat, IE, 8/5, p.117

### Acme Steel Co.:

Expansion-integration, new facilities, 7/29, p.73  
Expansion, B, 8/12, p.104  
Soaking pits, contract, 7/15, p.85  
Stretching, IE, 11/11, p.149

### Acoustica Associates Inc.:

Ultrasonic cleaning, IE, 11/25, p.120

### Adirondack Foundries & Steel Inc.:

Merges Consolidated, B, 11/4, p.98

### Admiral Corp.:

Retool program, 12/9, p.118

### Aerogel-General Corp.:

Automation field, B, 11/4, p.98

### Aetna Steel Products Corp.:

Expands Pottsville plant, 12/16, p.87

### Air Products Inc.:

Buys Aldan Oxygen, B, 7/22, p.96  
Mobile liquid oxygen plant, 11/4, p.60

### Air Reduction Co.:

Research lab, Murray Hill, 7/1, p.61

### Air Reduction Sales Co.:

Air separation plant, B, 8/12, p.101  
Electrode, IE, 11/11, p.152  
Flowmeters, IE, 7/29, p.156  
Welding control, IE, 11/18, p.218  
Welding head, IE, 12/9, p.213

### Airline Welding & Engineering Co.:

Weld roll planisher, IE, 8/19, p.206

### Airmatic Valve Inc.:

Sales contest sells valves, 8/19, p.112

### AIResearch Mfg. Co.:

Vacuum heat treating, 7/15, p.108

### Ajax Electric Co.:

Alloy pump, IE, 10/7, p.216  
Furnace electrodes, IE, 10/28, p.244  
Forging rolls, 7/8, p.98  
Furnace monitor, IE, 11/4, p.158

### Alan Wood Steel Co.:

Iron powder plant, 10/14, p.93

### Alco Products Inc.:

Revamps plant, 8/19, p.135

### Algoma Steel Corp.:

Tube inspection unit, 8/26, p.63

### Allegheny Ludlum Steel Corp.:

Earnings, 10/21, p.31  
Gas-fired furnaces, Brackenridge, 9/9, p.91  
Toolholder, IE, 8/12, p.157

### Alliance Structural Co.:

Welding solves down time problem: W. E. Heestand, 8/12, p.144

### Allied-Kennecott Titanium Corp.:

Plant site, N. Car., 7/1, p.61

### Allied Research Products Inc.:

Zinc bath purifier, IE, 12/16, p.130

### Allied Welder Corp.:

Welder guns, IE, 9/9, p.140

### Allis Co., Louis:

Induction motor, IE, 11/18, p.222

### Allis-Chalmers Mfg. Co.:

Furnace makes strong ore pellets (pilot plant), 9/23, p.128  
Germanium rectifiers, IE, 12/16, p.130  
Hot sinter screen, IE, 11/4, p.146  
Lift truck, IE, 7/1, p.94  
Motor framework, IE, 7/8, p.122  
Research lab, 9/9, p.94  
Towing tractor, 11/11, p.139

### Alloy Precision Castings Co.:

Expands, B, 7/22, p.89

### All State Welding Alloys Co. Inc.:

Chrome-nickel electrode, IE, 11/4, p.160

### Allyvac Metals Co.:

Enters vacuum metallurgy, B, 10/7, p.147

### Alphaco Inc.:

CO<sub>2</sub> gassing, IE, 9/23, p.148

### Aluminium Ltd.:

Atlanta sales office, B, 10/21, p.74  
Underground powerhouse, 9/16, p.91

### Aluminum Co. of America:

Aluminum alloy new, TO, 7/22, p.99  
Expands at Davenport, Iowa; aluminum rolling mill, 7/22, p.59  
King-size casting, 10/7, p.198  
Powdered aluminum (research lab), 8/5, p.107  
Research lab, foil and packaging, 9/23, p.82

### Aluminum Co. of Canada:

Markets "T" ingot, 9/9, p.69  
Strike ends, 9/23, p.73

### Aluminum Goods Mfg. Co.:

Aluminum rolling mill, B, 8/19, p.113

### Aluminum Tubing Co.:

To make line pipe, 11/4, p.93

### Alvey-Ferguson Co.:

Magnetic belt conveyor, IE, 8/12, p.154  
Turntable, IE, 7/8, p.120  
Washing machine, IE, 9/2, p.166

### American Bosch Arma Corp.:

Buys Hydramotive, B, 10/21, p.76

### American Brake Shoe Co.:

Aluminum foundry, B, 7/22, p.85  
Moves offices, B, 7/8, p.92  
Welding wire feeds into welding zone, IE, 7/29, p.155

### American Can Co.:

Merges Marathon Corp., 11/11, p.92

### American Chain & Cable Co. Inc.:

Hardness tester, IE, 10/28, p.250  
Rope carries signals, IE, 8/5, p.130  
Tests microhardness of chrome plated surfaces, 8/26, p.88

### American Die Casting Machinery Co.:

Diecast machine—fast, IE, 9/16, p.179

### American Electronics Inc.:

Test lab, Calif., 7/1, p.61

### American Gilsonite Co.:

Coking plant and refinery, Colo., 8/12, p.76  
Pipeline for solids, 7/1, p.37

### American Hardware Corp.:

Buys Kwikset, B, 7/22, p.90

### American Instrument Co. Inc.:

Porosimeter analyzes pores, TO, 7/1, p.65

### American Machine & Metals Inc.:

Builds gage plant, 9/2, p.90  
Buys Rahm Instruments and Hunter Spring, B, 9/23, p.114

### American Metal Co. Ltd.:

Merges Climax, officers, 11/25, p.87; mentioned, 11/18, p.104; 11/25, p.154

### American Metal Climax Inc.:

Merger, officers, 11/25, p.87

### American Motors Corp.:

AMC faces crucial year, 9/30, p.59; crisis denied, 9/23, p.94  
Car with short wheelbase, 8/19, p.122  
Cars use same block, 8/26, p.50  
Earnings, 11/25, p.74  
Production rally, 7/29, p.85

### American Optical Co.:

Metallurgical microscope, IE, 11/11, p.147  
Waste collector, IE, 11/11, p.146  
Welding helmets, IE, 7/15, p.144

### American Pullmax Co. Inc.:

Machine works sheet, IE, 10/28, p.250

### American Shear Knife Co.:

Tips on selection, setting and care of shear knives, 8/19, p.183

### American Sip Corp.:

Jig borer, IE, 9/30, p.96

### American Steel Foundries:

Boring mill, IE, 8/12, p.154

### Ampco Metal Inc.:

Brazing rod, IE, 9/23, p.148  
Spooled wire, IE, 10/14, p.160  
Welding flux, IE, 9/30, p.94

### Anaconda Co.:

Acquires Cochran Foil, B, 11/11, p.92; 11/25, p.154

### Anaconda Wire & Cable Co.:

Plant replaces west coast mill, 9/23, p.85

### Anadite Inc.:

Vacuum plating cadmium, 9/9, p.134

### Anchor Fasteners Inc.:

Formed, B, 11/18, p.137

### Anchor Metals Inc.:

Galvanizing plant, 8/19, p.113  
Metal components plant, 12/9, p.149

### Anout Engineering Co.:

Electrolytic machining, 12/9, p.196

### Ap Parts Corp.:

Selis div., B, 12/9, p.146

### Apex Bearings Co.:

Bigger powdered bearings (joined with silver solder), 12/23, p.72

### Apex Bronze Foundry Co.:

Sold, B, 12/2, p.89

### Apex Smelting Co.:

Buys National Metallurgical, B, 8/12, p.107

### Apex Tool & Cutter Co.:

Milling cutters, IE, 8/5, p.129

### Applied Science Corp. of Princeton:

Thickness control, IE, 10/7, p.213

### Arc-Cast Molybdenum Development:

How to weld molybdenum: R. R. Freeman, 7/8, p.101

### Arclux Corp.:

Opens new plant, B, 11/18, p.110

### Archer-Daniels-Midland Co.:

Air setting speeds coremaking: D. R. Chester, 7/22, p.121  
Buys Federal Foundry Supply, B, 8/12, p.110

### Arkla Air Conditioning Corp.:

Buys Serval plant, 10/7, p.147

### Arlin Products Inc.:

Inspection machine, IE, 11/18, p.218  
Piston inspector, IE, 12/9, p.226

### Armco Drainage & Metal Products Inc.:

Dedicates plant, B, 7/8, p.87

### Armco Steel Corp.:

Acquiring National Supply, 12/30, p.19  
Buys sintering unit, B, 7/22, p.90  
Buys Union Wire Rope, 11/18, p.140  
Develops pH steel, 9/16, p.73  
How to avoid trouble with stainless welds, Part 2: G. E. Linert, 7/1, p.70  
Pickling stainless to remove scale: W. E. McFee, 11/25, p.103  
Pipe mill, 11/4, p.75  
Private 'Point 4' Program, tech. aid to foreign firms, 10/14, p.75

### Armstrong Cork Co.:

Gasket assembly, IE, 9/9, p.138

### Armstrong & White Inc.:

Vapor degreaser, IE, 7/1, p.90

### Aronson Machine Co.:

Self-locking bolt, IE, 9/16, p.168  
Welding positioner, IE, 11/11, p.140

### Arwood Precision Casting Corp.:

Aircraft aluminum castings, 11/18, p.151

### Ashland Mining Co.:

Low-grade pellet plant, B, 10/7, p.155

### Assembly Products Inc.:

Proportioning control, IE, 12/9, p.216

### Associated Spring Corp.:

Vacuum heat treating hairsprings: Tom Raedy, 10/21, p.94

### Atlas Corp.:

Bids for uranium mill, 12/30, p.53

### Atlas Powder Co.:

Consolidates, B, 12/9, p.145

### Atlas Press Co.:

Boring machine, IE, 7/8, p.120  
Lathes, IE, 12/30, p.71

### Atlas Steels Ltd.:

Vacuum crane handles sheets, 12/2, p.102

### Atmosphere Control Co. Inc.:

Forms spinning div., B, 10/21, p.65

### Austen Inc.:

Investment casting by vacuum, 11/25, p.96

### Automatic Temperature Control Co.:

Changes name, address, B, 7/29, p.99

### Automatic Transportation Co.:

Fork lift line, IE, 9/9, p.137  
Fork lift stacks, IE, 12/9, p.219

### Automation Associates Inc.:

High-speed tube machine, IE, 12/2, p.127



**Automation Systems Inc.:**

Press unloader, IE, 12/30, p.72

**Automotive Rubber Co. Inc.:**

Plating racks, IE, 9/16, p.162

**Avco Mfg. Corp.:**

Markets porcelain enamel service station structures, 7/29, p.99

**Axelson Mfg. Co.:**

Lathe, IE, 8/12, p.162

Lathe, IE, 11/18, p.217

**B****Babcock & Wilcox Co.:**

Adds electric furnace, B, 11/18, p.110

**Bacon Crane & Hoist Corp.:**

Cranes, IE, 12/23, p.88

**Bailey Co., William M.:**

Clay guns, IE, 7/8, p.120

**Baird-Atomic Inc.:**

Evaporograph, instrument finds hot spots, 8/12, p.134

**Baker Bros. Inc.:**

Cylinder block inspection machine, 8/12, p.130

Inspects cylinder blocks, IE, 8/19, p.206

Sells product line, B, 12/30, p.53

**Baker-Raulang Corp.:**

LPG or gas powers 2000-lb lift truck, IE, 7/15, p.137

Lift truck, IE, 7/1, p.94

**Baldwin-Lima-Hamilton Corp.:**

Buys rights from Futurmill, B, 10/7, p.150

Fatigue testers, IE, 12/9, p.229

Satellite launcher, 10/7, p.204

Sheet, strip mill for Mexican firm, 10/7, p.150

Testing machine, IE, 11/25, p.120

**Bal-Tate Furnace Co.:**

Liquid glass heat, 12/2, p.93

**Barber Colman Co.:**

Hendey lathes, IE, 9/23, p.143

Thermometers, IE, 7/15, p.142

**Barium Steel Corp.:**

Integrated mill for New Jersey, 9/9, p.67

**Barnes Drill Co.:**

Liquid sizing, IE, 7/1, p.90

**Barnes Engineering Co.:**

Infrared camera detects hot spots, 11/18, p.157

**Bay State Abrasive Products Co.:**

Cutoff wheel, IE, 10/7, p.214

**Beach-Russ Co.:**

Vacuum pumps, IE, 9/9, p.156

**Beaird Co. Inc., J. B.:**

Installs huge vertical boring mill, p.c., 7/22, p.89

Research unit, B, 7/29, p.99

**Beatty Machine & Mfg. Co.:**

Flange punch, IE, 9/9, p.152

**Becker Crane & Conveyor Co.:**

Cranes, IE, 7/1, p.92

Jib crane, IE, 8/26, p.94

Overhead crane kit, IE, 8/5, p.129

**Beckman Instruments Inc.:**

Buys Arnold Beckman Inc., 12/9, p.149

Pocket meter, IE, 9/30, p.94

Systems div., 8/5, p.83

**Behr-Manning Co.:**

Contour polisher, IE, 9/16, p.168

Protective paper, IE, 7/15, p.150

**Belke Mfg. Co.:**

Barrel plater, IE, 12/30, p.73

**Bell & Howell Co.:**

Buys Inserting & Mailing Machine, 12/30, p.53

Employee attitude survey, 12/9, p.116

Missile scoring pad, new field, 12/30, p.31

**Bell Aircraft Corp.:**

Buys Birma Mfg., 8/26, p.64

**Bell Telephone Laboratories:**

Soldering aluminum with zinc-based alloy, 12/2, p.119

**Beloit Eastern Corp.:**

Skinning pipe rolls, 7/8, p.115

**Belt Corp.:**

Conveyor, IE, 7/15, p.144

**Benchmark Mfg. Co.:**

Deep drawing press, IE, 12/9, p.220

Roll straightener, IE, 7/8, p.118

**Bendix Aviation Corp.:**

Buys interest in Poroloy, B, 10/7, p.147

**Berger-Iding Polishing Inc.:**

Organized, B, 8/26, p.63

**Bergren Steel Corp.:**

Formed, B, 12/30, p.53

**Berkeley-Davis Inc.:**

Strip splicing mill, IE, 12/23, p.86

**Bernard Welding Equipment Co.:**

Welding cooler, IE, 12/23, p.86

**Berry Steel Corp.:**

Organized, 12/30, p.52

**Bethlehem Steel Co.:**

Annealing lines, fast without soaking, 10/14, p.124

Atomic-powered destroyer, 10/7, p.114

Grace retires, Homer succeeds, 11/11, p.65

Homer before Kefauver committee, 10/28, p.114

Lackawanna expansion plans, 11/18, p.103

Lackawanna expands, openhearth annealing furnaces, 7/22, p.85

Prepared annealing atmosphere: G. J. Campbell, 11/18, p.160

Volkswagen plant in Germany gets sheet steel, 8/19, p.102

**Bijur Lubricating Corp.:**

Gear pump, IE, 9/30, p.94

**Birdsboro Steel Foundry & Machine Co.:**

Extrusion press, versatile, 8/5, p.104

**Bishop & Co., J.:**

Expansion program, 7/15, p.82

**Bjorksten Research Laboratories:**

Foam aluminum developed, TO, 7/1, p.65; 7/15, p.120

**Black & Decker Mfg. Co.:**

Impact wrench, IE, 9/16, p.178

**Black-Clawson Co.:**

Buys Sutherland, B, 12/9, p.145

Paper mill for Poland, 9/30, p.55

**Blakeslee & Co., G. S.:**

Offers ultrasonic units, 12/2, p.81

**Bliss Co., E. W.:**

Contour roll lathe, IE, 8/19, p.201

Die handling machine, IE, 11/4, p.160

Gap frame press, IE, 7/15, p.144

**Bohn Aluminum & Brass Corp.:**

Holland, Mich., facility, B, 9/23, p.111

**Boice Gages Inc.:**

Buys Nilsson Gage, B, 7/15, p.89

Expands, Calif., B, 9/23, p.107

**Borg-Warner Corp.:**

Byron Jackson Div.: Atomic reactor welds, checklist, 11/25, p.92

Calumet expands, 11/25, p.62

**Branson Instruments Inc.:**

Thickness tester, IE, 11/18, p.225

**Branson Ultrasonic Corp.:**

Ultrasonic cleaner, IE, 9/2, p.177, 10/28, p.246; 11/11, p.140

**Brew & Co. Inc., Richard D.:**

High vacuum furnace, IE, 7/15, p.147

**Bridgeport Brass Co.:**

Cold extrudes molybdenum, 9/9, p.91

**Briney Mfg. Co.:**

Arbor bearings, IE, 9/30, p.97

**Brooks & Perkins:**

Building the satellite's shell, 7/1, p.84

**Brush Beryllium Co.:**

Air Materiel Command contract for sheet beryllium, 12/30, p.20

Plant dedication, Elmore, O., 12/2, p.110

**Brush Electronics:**

Metal Monitor checks steel coils, 8/19, p.164

**Budd Co.:**

Buys Gamma Corp., enters nuclear field, 8/12, p.115

Buys Krouse Testing, B, 11/4, p.100

Portable inspection tool, "Iridtron 40," TO, 8/26, p.67

**Buffalo Forge Co.:**

Drills, IE, 9/23, p.144

**Buffalo Metal Container Corp.:**

Presstrims diecastings, IE, 7/1, p.91

Trim presses, IE, 12/16, p.126

**Buffalo Sintering Corp.:**

Pug mill hardfacing extends life of parts contacting abrasives, 7/1, p.72

**Buffalo Tank Corp.:**

Buys Virginia Steel, 8/19, p.143

**Buhr Machine Tool Co.:**

Buys Sidney Machine Tool, 11/4, p.98

Economomatic, IE, 9/2, p.167

Manifold machine, IE, 7/8, p.120

Trunnion machine, IE, 10/7, p.214

**Burg Tool Mfg. Co. Inc.:**

Tape controls positioning table, IE, 7/29, p.155

**Burt Mfg. Co.:**

Union squeeze, 12/9, p.111

**Buschman Co., E. W.:**

Conveyor switch, IE, 9/2, p.174

Conveyors, IE, 8/5, p.120

**Byers Co., A. M.:**

Alloy steel, IE, 9/16, p.180

**C****C & D Batteries Inc.:**

Batteries—increased power, IE, 12/2, p.127

Battery chargers, IE, 12/30, p.74

**Calumet & Hecla Inc.:**

Wolverine furnace treats zirconium for atom, 12/2, p.58

Wolverine moves offices, 12/2, p.88

Wolverine Tube: Making packages better, cheaper, 12/23, p.80

**Cambridge Wire Cloth Co.:**

Woven wire curtain solves flying chips, TO, 12/16, p.101

**Campbell Machines Co.:**

Storage feeders, IE, 10/21, p.107

**Canadian Car Co.:**

Buys Standard Railway Equipment, B, 7/22, p.85

**Canfield Steel Co.:**

New name, 8/26, p.63

**Capital Metals Co. Inc.:**

Merger, B, 7/1, p.62

**Carborundum Co.:**

Expansion program, B, 7/15, p.85

Fire safe cloth, TO, 8/12, p.123

Integrates divisions, 12/30, p.52

Mechanization cuts slab grinding cost: H. R. Kerber, 9/2, p.138

**Cargill Detroit Corp.:**

Storage track, IE, 8/19, p.202

3000-lb test unit, IE, 7/15, p.142

**Carpenter Steel Co.:**

Buys New England subsidiary, 12/23, p.62

Detroit warehouse, 7/15, p.82

Northeastern Steel purchase, conf. ruling, 7/22, p.52

Northeastern purchased, renamed, 12/2, p.81

**Carrier Corp.:**

Buys crankshaft line, B, 9/30, p.73

**Case Co., J. I.:**

American Tractor merger, diversification, 10/21, p.47

Farm equipment order, 12/23, p.34

New lines, 11/25, p.54

**Caterpillar Tractor Co.:**

Boron deepens casting hardness sprockets for crawler tractors, 10/21, p.83

Builds industrial engine plant, 9/2, p.90

Spectroscopy lab aids quality control, 10/14, p.70

**Central Screw Co.:**

Frankfort, Ky., plant, B, 11/11, p.95

**Century Engineers Inc.:**

Changes name, 11/4, p.93

**Cerro de Pasco Corp.:**

Buys Lewin-Mathes, 7/15, p.88

**Chainveyor Corp.:**

Overhead conveyor, IE, 10/8, p.249

**Chance Vought Aircraft Inc.:**

Air Force contract for castings, 12/16, p.87

**Chase Brass & Copper Co.:**

Automatic copper tube mill: Installed at Babbitt plant, 11/11, p.87

New mill ups tube production, 11/18, p.214

Tubing line cuts cost, ups quality, 9/9, p.125

Sells cold heading dept., 12/16, p.87

**Checker Cab Co.:**

To make passenger car, 10/14, p.79

**Chrysler Corp.:**

1st half earnings, 7/15, p.68; 8/15, p.70

'58 outlook, press preview, 10/7, p.134

Airtemp: New line ups blow wheel production, 7/15, p.124

Assembly plant contracts, 12/9, p.141

Assembly plant, St. Louis, 10/22, p.52

Ballistic missile, Redstone, 10/22, p.40

Imperial introduced, 10/28, p.13

Luxury sports car, 12/23, p.50

Missile plant, Ala., denied, 10/7, p.113

Spline rolling machines, 8/12, p.14

Stamping plant, Twinsburg, O., boosts capacity, 11/11, p.136

**Cincinnati Cleaning & Finishing Machinery Co.:**

Dip processing, IE, 9/2, p.173

**Cincinnati Lathe & Tool Co.:**

Drill sharpener, IE, 12/30, p.7

**Cincinnati Mfg. Co.:**

Milling machine, IE, 8/12, p.154



- Clark Controller Co.:**  
Forms divisions, 12/30, p.53
- Clark-Cooper Co. Inc.:**  
Reorganized, B, 11/18, p.137
- Clark Equipment Co.:**  
Drilling-chamfering, one-operation press, 12/2, p.116  
Truck trucks, IE, 7/22, p.125; 8/12, p.152  
P gas trucks, IE, 8/26, p.96  
Tacking truck, IE, 7/8, p.118
- Clark Industries Inc.:**  
Tacking chutes, IE, 8/19, p.212
- Clearing Machine Corp.:**  
Press feeder, IE, 12/9, p.228
- Clearer-Brooks Co.:**  
Cells unit, 12/30, p.52
- Clearman Machine Tool Corp.:**  
Boring and drilling, IE, 9/9, p.152  
Tapping machine, IE, 9/16, p.170
- Cleveland Cap Screw Co.:**  
Cold forger turns out odd-shaped fasteners: This machine makes 1 1/4-in. bolts, 9/16, p.141  
Cutting stock preparation costs, 12/9, p.192
- Cleveland Crane & Engineering Co.:**  
Truck lift cable, IE, 11/4, p.151  
Ramrail carrier controlled from cab, IE, 9/30, p.93
- Cleveland Electric Illuminating Co.:**  
Coal pipeline, 7/1, p.37
- Cleveland Graphite Bronze Co.:**  
Purchase analysis, 7/8, p.63
- Cleveland Grinding Machine Co.:**  
Optical projection grinder, IE, 7/1, p.89
- Cleveland Hard Facing Inc.:**  
Extruded steel tubing, propane engine part, 8/5, p.107
- Cleveland Hardware & Forging Co.:**  
Sold to Porter, 8/5, p.50
- Cleveland Metal Abrasive Co.:**  
Choosing an abrasive for shot peening, 7/29, p.111
- Cleveland Pneumatic Tool Co.:**  
Fixture checks, tests plane part, 8/19, p.180
- Cleveland Punch & Shear Works Co.:**  
500-ton press, IE, 8/26, p.90
- Clevite Corp.:**  
Atomic fuel element plant, 8/12, p.114
- Climax Engine & Pump Mfg. Co.:**  
Sold, B, 12/2, p.89
- Climax Molybdenum Co.:**  
How to weld molybdenum: J. Z. Briggs, 7/8, p.101  
Merged with American Metal Ltd., 11/18, p.104; 11/25, p.87 and 154
- Clingan & Fortier Inc.:**  
Changes name, B, 9/16, p.110
- Cochrane Foil Co.:**  
Pallets of high strength alloy steel solve warping, 7/29, p.138  
To merge, 11/25, p.154
- Cold Metal Products Co.:**  
Merged by J&L, 7/15, p.88  
Name challenged by courts, 9/9, p.68
- Colonial Broach & Machine Co.:**  
Fast broach, IE, 7/1, p.92  
Lundell, BDSA post, 11/4, p.72  
Sculpture machines, IE, 11/25, p.117
- Colson Corp.:**  
Builds in South, B, 8/19, p.135  
Mechanical lifter, IE, 9/16, p.188
- Columbia Steel & Shafting Co.:**  
Tubing mirror interior finish 'Lustraloy,' 12/16, p.114
- Combustion Engineering Inc.:**  
Automatic foundry for cast iron soil pipe, 10/14, p.120
- Commander Mfg. Co.:**  
Multiple drill, IE, 10/28, p.239
- Commercial Shearing & Stamping Co.:**  
Stamping plates to close tolerances, 8/26, p.72
- Commonwealth Edison Co.:**  
Builds nuclear power station, B, 7/8, p.90
- Connecticut Screw & Rivet Co.:**  
Forms Anchor Fasteners, 11/18, p.137
- Connecticut Tool & Engineering Co.:**  
Rotor Recipro machine, IE, 9/9, p.138
- Consolidated Electrodynamie Corp.:**  
Dry heat anneals electronic components, TO, 7/22, p.99  
Vacuum induction furnace, IE, 10/14, p.156
- Consolidated Foundries & Mfg. Corp.:**  
Adirondack merger, 11/4, p.98  
Buys casting business, B, 7/29, p.102
- Consolidated Mill Supply Co.:**  
Scrap shear, IE, 11/4, p.146
- Continental Machine Co.:**  
Cutoff machine, IE, 8-12, p.162
- Continental Technical Service Inc.:**  
Renamed, 9/30, p.73; 12/2, p.86
- Convaire: See General Dynamics**
- Cooper Alloy Corp.:**  
Valves for liquid oxygen, IE, 7/1, p.91
- Cooper-Bessemer Corp.:**  
Ductile iron: Why is it popular? 9/16, p.130  
Gas liquefaction engine, IE, 7/22, p.126
- Copperloy Corp.:**  
Magnesium welded faster, Lite-Line Div., 9/23, p.118
- Copperweld Steel Co.:**  
Merging Superior Steel (other diversifications), 9/2, p.91  
Merger completed (new capacities), 11/18, p.137; date, 12/9, p.108  
Ohio Seamless Tube: How to get more from a spheroidizing furnace: Leyda and Assel, 12/9, p.208
- Corry Aero Supply Co.:**  
Buys Wing Mfg., B, 8/12, p.107
- Crane Co.:**  
Atomic valves, 8/12, p.115
- Crane Packing Co.:**  
Monochromatic light, IE, 8/12, p.152
- Cribben & Sexton Co.:**  
Buys Magic Chef, B, 10/7, p.150
- Crichton Co.:**  
Speed reducers, IE, 11/18, p.226
- Cross Co.:**  
17-station machine, IE, 7/8, p.118  
Licenses firms, 7/8, p.83
- Crucible Steel Co. of America:**  
Buys Rem-Cru, 11/18, p.140  
Mill improvement program, 9/30, p.57  
Warehouse center, Solon, O., 7/8, p.82
- Cummins Engine Co. Inc.:**  
Mid-automation: Transforms from machine shop to production line, 7/22, p.117
- Curtiss-Wright Corp.:**  
Metals processing div. expands, 11/18, p.112  
Moves scientific div., 12/30, p.53
- Cyril Bath Co.:**  
Large stretch former, TO, 9/23, p.117  
Radial draw former for Convaire, TO, 12/23, p.65  
Strain gages tied to control system on stretch formers, TO, 7/29, p.111  
Wipe form equipment, TO, 12/30, p.55
- D**
- Dake Corp.:**  
Hydraulic presses, IE, 10/28, p.245
- Dahlstrom Machine Works Inc.:**  
Roll former, IE, 11/18, p.218
- Dalton Foundries Inc.:**  
Castings conveyed to cleaning mill, 7/8, p.114
- Danly Machine Specialties Inc.:**  
Press designed for quick die changes, 7/29, p.75
- Dart Truck Co.:**  
Shuttle truck, IE, 12/30, p.72
- Davey Compressor Co.:**  
Hydrovane rotary compressor, IE, 8/26, p.93
- Davidson Enamel Products Co.:**  
Merges, B, 7/8, p.91
- Daystrom Inc.:**  
Reorganizes, 9/23, p.107
- Delta Power Tool:**  
Screw machine, IE, 11/11, p.140
- Delta Welder Corp.:**  
Hemming machine, IE, 10/7, p.222
- Dempster Bros. Inc.:**  
Baling press, IE, 11/4, p.145
- Designers for Industry Inc.:**  
Taylor-Winfield licensed, 12/30, p.52
- Detrex Chemical Industries Inc.:**  
Rotary drum degreaser, IE, 10/28, p.235
- Detroit Bevel Gear Co.:**  
Sold, B, 10/14, p.98
- Detroit Gasket & Mfg. Co.:**  
Buys alum. extrusion press, B, 11/25, p.87  
Buys casting machine, 12/23, p.50
- Detroit Harvester Co.:**  
Builds, 12/30, p.53
- DeVilbiss Co.:**  
Buying Newcomb-Detroit, 8/19, p.143  
Growing the new products, 12/2, p.64
- DeWalt Inc.:**  
Machine cuts panels, IE, 7/8, p.118
- Diamond Alkali Corp.:**  
Desulphurizing process, 7/1, p.74
- Diamond Chain Co. Inc.:**  
Adaptation pays off, bar-tube storage racks, 12/9, p.119
- Diamond Machine Tool Corp.:**  
Punch press, IE, 7/1, p.90
- Dickerman Mfg. Co., H. E.:**  
Press feed, IE, 7/8, p.118
- Dieter Co., Harry W.:**  
Tempers sand, IE, 9/2, p.172
- Disogrin Industries Inc.:**  
Coating for wire wheels, TO, 10/14, p.115
- Dixon Automatic Tool Inc.:**  
Automatic screw driver, IE, 8/5, p.124
- Dixon Crucible Co., Joseph:**  
Die lubricant, IE, 11/11, p.142
- Dobeckmun Co.:**  
Merging, 7/15, p.89
- Dodge Mfg. Corp.:**  
Coupling uses rubber tire, IE, 7/1, p.89
- Dominion Brake Shoe Co. Ltd.:**  
Buys Manitoba Foundries, 8/26, p.64
- Dominion Foundries & Steel Ltd.:**  
Gamma radiography machine, TO, 12/23, p.65
- Douglas Aircraft Co. Inc.:**  
Cold treatment ups workability of metals, 8/5, p.93  
Missile status, 12/23, p.62  
Stretch press for wing panels, 9/2, p.130  
Ultrasonic testing raw materials, 7/1, p.66
- Dow Chemical Co.:**  
Buys Velasco, Tex., plant, 11/18, p.266  
Merging with Dobeckmun, 7/15, p.89
- Dow Furnace Co.:**  
Heat treat furnace, IE, 7/29, p.156
- Dracco Corp.:**  
Air filter, IE, 12/16, p.128  
Expands in two cities, B, 7/29, p.99  
Gardner-Denver negotiations, 11/4, p.98  
Gardner-Denver negotiations terminated, 12/23, p.63
- Duboc Associates, R. E.:**  
Formed, B, 12/2, p.85
- Duff-Norton Co.:**  
Mechanical screw jacks raise heavy parts, 9/9, p.136
- Dumont-Airplane & Marine Instruments Inc.:**  
Buys Le John Mfg., 12/30, p.53
- Dun & Bradstreet Inc.:**  
Small business survey, 11/11, p.99
- E**
- E & R Mfg. Co.:**  
Refractory cutter, IE, 12/2, p.130
- Eastern Rolling Mills Inc.:**  
Expands facilities, B, 8/12, p.101
- Eastern Stainless Steel Corp.:**  
Sendzimir mill, 9/2, p.115; 10/21, p.39  
Slag washed stainless, technique, 9/30, p.86
- Eastman Kodak Co.:**  
Tennessee Eastman: New adhesive holds 5000 psi, 11/11, p.128
- Eaton Mfg. Co.:**  
Choosing valve materials: J. R. Driear, 12/9, p.161  
Gear div. facilities, 8/26, p.38  
Loader (conveyor) speeds auto plating line, 12/2, p.108
- Eclipse Fuel Engineering Co.:**  
Aluminum melting furnaces, IE, 9/16, p.161  
Tempering furnace, IE, 7/29, p.156  
Tilting furnace, IE, 12/23, p.85  
Unimix machines, IE, 11/4, p.146  
Washing machine, IE, 8/19, p.202
- Eder Instrument Co.:**  
Medical tools sold for inspection uses, 7/22, p.62
- Edlund Machinery Co.:**  
Driller, IE, 8/5, p.130
- Elastic Stop Nut Corp. of America:**  
Clinch nuts, self-locking, IE, 7/22, p.126
- Electric Auto-Lite Co.:**  
Chrysler supplier, 11/11, p.74  
Closes Burt Foundry, B, 10/7, p.147



**Electric Steel Foundry Co.:**

Methods analysis clinic, 11/18, p.112

**Electric Storage Battery Co.:**

Cranking battery, IE, 10/14, p.144  
Ray-O-Vac merger, 9/16, p.112;  
10/28, p.153

**Electro-Air Cleaner Co. Inc.:**

Air cleaner, IE, 7/1, p.93

**Electro Metallurgical Co.:**

Engineering center, B, 11/11, p.87  
Forms fine metals-chemicals div.,  
B, 9/9, p.107  
Price revisions, 9/30, p.110  
Self-reducing alloy, TO, 7/15,  
p.103

**Electronic Control Corp.:**

TorqueTrol, IE, 8/26, p.90

**Electronic Control Systems Inc.:**

Shop-sized numerical control, TO,  
12/2, p.93

**Elgin National Watch Co.:**

Research center opened, B, 12/30,  
p.53

**Ellen Co., Vern G.:**

Overhead chain conveyor, IE,  
12/16, p.128

**Elliott Co.:**

Mill motor, IE, 7/8, p.118

**Elox Corp. of Michigan:**

Die machining, IE, 8/5, p.118

**Elwell-Parker Electric Co.:**

Coil handling truck, IE, 7/8, p.118  
Fast fork truck, IE, 10/14, p.153

**Emhart Mfg. Co.:**

Sells Henry & Wright Div., 8/19,  
p.143

**Empire-Reeves Steel Corp.:**

Formed (merger) as subsidiary of  
Universal-Cyclops, 12/9, p.141

**Enthone Inc.:**

Acid inhibitor, IE, 9/2, p.172  
Enbond "Z" process, IE, 8/5,  
p.123

**Eraser Co. Inc.:**

Wire stripper, IE, 8/12, p.152

**Erie Forge & Steel Corp.:**

Vacuum degassing, 12/9, p.155

**Erie Mining Co.:**

Mixer-Muller, taconite conveyor  
belt mixer, 12/2, p.126

**Eriez Mfg. Co.:**

Sheet fanner, IE, 9/16, p.164

**Ettco Tool & Machine Co. Inc.:**

Multiple heads, IE, 9/9, p.138

**Eutectic Welding Alloys Corp.:**

Hard surfacing material, IE, 7/15,  
p.142  
Steel electrode, IE, 8/19, p.206  
Welding rod, IE, 8/5, p.118; 8/12,  
p.154

**Ex-Cell-O Corp.:**

Boring machine with two inde-  
pendent stations, built for auto  
plant, 7/22, p.102  
Boring machines, IE, 9/16, p.176;  
11/25, p.120  
Buys Roto-Mation, B, 12/16, p.95  
Large boring machines, IE, 9/2,  
p.176  
Tool grinder, IE, 12/30, p.73

**Expert Automation Machine Co.:**

Forming machine, IE, 8/19, p.202  
Index machine, IE, 7/1, p.93

**Expert Welding Machine Co.:**

Automated welder, IE, 10/21,  
p.107  
Twin arc welder, IE, 12/2, p.129

**Extremulus Inc.:**

Transmission belt, IE, 9/23, p.146

**F****Fageol Co., R. D.:**

Sells rebuilding unit, B, 8/26, p.64

**Fairbanks, Morse & Co.:**

Electric starter, IE, 12/16, p.130

**Fairchild Engine & Airplane Corp.:**

Expands, B, 7/8, p.84

**Falk Corp.:**

Shaft mounted drive, IE, 9/30,  
p.97

**Fanco Machine Co.:**

Vertical miller, IE, 11/11, p.154

**Fansteel Metallurgical Corp.:**

Tantalum-columbium plant, B,  
12/16, p.95

**Farquhar Div.: See Oliver****Fauver Co. Inc., J. N.:**

Press lube, IE, 12/30, p.72

**Federal Machine & Welder Co.:**

Buys Berkely-Davis, B, 9/2, p.126

**Federal Pacific Electric Co.:**

Expands lab system, 12/2, p.64

**Federal Products Corp.:**

Gaging system, IE, 9/2, p.174

**Federal Shock Mount Corp.:**

Sold, B, 12/30, p.53

**Federal Steel Corp.:**

Organized, B, 9/16, p.107

**Federal Tool & Mfg. Co.:**

Stamping plant, Calif., 9/23, p.114

**Feedall Inc.:**

Bar and tube feeder, IE, 8/12,  
p.157  
Bulk loader, IE, 8/19, p.220  
Elevating feeder, IE, 8/5, p.128

**Fenn Mfg. Co.:**

Swaging machine, IE, 8/12, p.161

**Ferguson Co., H. K.:**

Builds Dofasco slab mill, replace-  
ment construction, 7/22, p.108

**Ferro Corp.:**

Enameling furnace, IE, 9/2, p.176

**Firestone Steel Products Co.:**

Anodizes alum. auto trim, 9/9,  
p.69  
One machine anodizes many colors,  
12/30, p.65

**Firth Sterling Inc.:**

Broadens line, induction vacuum  
melt superalloys, 8/19, p.135  
Zirconium contract, 12/23, p.62  
Zirconium mill products, contract,  
12/2, p.48

**Fischer & Porter Co.:**

Moves offices, B, 12/9, p.149

**Fisher Scientific Co.:**

Gas analyzer, IE, 9/30, p.96

**Florida Steel Corp.:**

Builds mill, 11/25, p.54

**Fluor Corp. Ltd.:**

Forms English sub., B, 12/2, p.85

**Food Machinery & Chemical Corp.:**

Epoxy compounds price cut, 11/4,  
p.170

**Fenestra Inc.:**

Merges Davidson Enamel, B, 7/8,  
p.91  
Merges Thorn, B, 12/23, p.63;  
10/21, p.76

**Fenlind Engineering Co.:**

Milling machine, IE, 10/14, p.163

**Ford Motor Co.:**

1958 models, 8/12, p.88  
Alloy with magnetic properties,  
11/25, p.73  
Boring setup holds size, Sterling  
plant, 10/7, p.174  
Bumper plant line-up, TO, 9/16,  
p.129

**CO safety stressed in steel div.:**

R. D. Byrom, 7/29, p.140  
Carburetor facility, Rawsonville,  
Mich., 12/2, p.67  
Chemical capping cuts drawing  
rejects: J. S. McNairn, 8/26,  
p.76  
Chicago plant, triple-action press,  
8/19, p.167  
Earnings, 1st half, 8/5, p.70  
Earnings report, 11/11, p.74  
Economy car outlook, 10/14, p.80  
Edsel station wagons, 7/8, p.68  
Edsel: STEEL reports, 9/9, p.78  
Machine tool building block con-  
cept, 11/4, p.67 and 130  
Missile plant, Calif., B, 11/18,  
p.119  
Monarch replaced by Edsel, 9/9,  
p.94  
Nance heads L-M Div., 9/16,  
p.93  
Recessing tool machines steel forg-  
ing at chassis parts plant,  
Sterling, Mich., 12/16, p.107  
Station wagon sales, Mercury  
leads, 8/19, p.121  
Tax refund case lost, 12/16, p.66  
Transportation 2000 A.D.: Stylists  
deplot methods, 8/26, p.47  
Utility truck for military, 9/9,  
p.77  
Water base paint, TO, 7/22, p.99  
Water paint for metal parts, 8/5,  
p.88

**Fosdick Machine Tool Co.:**

Automatic jig borer, tape control,  
introduced, 7/1, p.76  
Automatic jig borer-tape control  
for IBM, 12/16, p.119  
Jig borer, IE, 7/8, p.117

**France Refractories Co., J. H.:**

Expands, 7/1, p.61

**Franklin Research Corp.:**

Buys Fullerton Mfg., 12/16, p.92

**Freeport Sulphur Co.:**

Cuban contract, 9/30, p.73

**Fruehauf Trailer Co.:**

Aluminum extrusion plant, Ala.,  
9/30, p.57  
Price increase, 7/29, p.66

**Fuller Co.:**

Bulk materials cooler, IE, 11/18,  
p.222  
Buys Dracco, B, 9/9, p.98

**Fuller Brush Co.:**

Sheet scrubber, IE, 9/23, p.146

**Fullerton Mfg. Corp.:**

Sold, B, 12/16, p.92

**G****Galger Engineering & Mfg. Co.:**

Worktable, IE, 12/30, p.72

**Gardner-Denver Co.:**

Air compressor, IE, 7/15, p.150  
Angle tools, IE, 7/1, p.94  
Expands foundry, 9/2, p.115  
Sold, B, 11/4, p.98

**Gem Clay Forming Co.:**

Sold, B, 11/18, p.137

**General American Transportation Corp.:**

Parker-Kalon enters new field,  
10/21, p.65

**General Dynamics Corp.:**

Convair camera films templates,  
8/26, p.81  
Convair radial draw former, 12/16,  
p.87  
Merges Liquid Carbonic, 8/12,  
p.107; plans, 9/9, p.98; 10/14,  
p.101

**General Electric Co.:**

Aircraft Gas Turbine Div.: 12-ft  
gaging unit, 9/16, p.155  
Aircraft gear alloys evaluated, B,  
7/8, p.85  
Analog computer, IE, 10/7, p.208  
Brazing for high temperature use:  
G. S. Hoppin, 8/26, p.82  
Carbide tool geometry guide, 7/8,  
p.110  
Diamond production, 11/11, p.69  
Ductile iron: How heat treatment  
upgrades it: R. S. Zeno and  
C. D. Walker, 9/16, p.132

**Evendale plant: Tape guides ju-**

engine boring, 12/2, p.112  
Foundry x-ray spectrometer an-  
alyzes heats, 12/9, p.156  
Fractional motors, IE, 9/16, p.19  
Gear motor and speed reduce-  
lines introduced, 9/30, p.57  
Installs huge furnace, B, 7/22,  
p.85  
Integral hp motors, IE, 9/2, p.16  
Magnetic motor starter, IE, 8/4,  
p.117  
Modernizes fan plant, 12/30, p.3  
Price cut on pole-type trans-  
formers, 12/23, p.30  
Recorder, IE, 7/1, p.94  
Research lab: Clue to stronger  
steel, 11/25, p.98  
Silicon power rectifiers, IE, 12/22,  
p.86  
Speed drives, IE, 10/21, p.104  
Speed variators, IE, 9/23, p.143  
Titanium-tipped racks for anodi-  
zing refrigerator parts, 9/2,  
p.83  
Tool holders, IE, 11/25, p.120  
Welding dept. discontinued, 7/4,  
p.59

**General Motors Corp.:**

1958 style trends, 8/12, p.87  
AC Spark Plug:  
Automatic assembly, 7/29, p.11  
Missile vendors, Caserio report,  
11/25, p.63  
Missile parts—inertial guidance  
how to make, 11/25, p.64  
Missiles contract, 7/22, p.72  
Armed Services studies profits of  
aircraft engine contracts, 7/22,  
p.65  
Buick:  
One system handles many waste  
(Flint plant), 9/16, p.146  
Vibration cut by nodal point  
engine mounting, 7/15, p.68

**Cadillac:**

Air spring on Eldorado, 7/22,  
p.74  
Machine culls bad cylinder  
blocks, 8/12, p.130

Casting metal, Armasteel, 12/2,  
p.68

**Chevrolet:**

Aluminum foundry, 10/14, p.7  
Cost-of-living allowances, 12/2,  
p.68

Curtice to retire, who succeeds  
7/1, p.47

Foreign cars, 7/1, p.48

Frigidaire production line (Day-  
ton), cabinet in 38 seconds,  
8/19, p.194

Magnetic quench test, new way to  
measure: Bender and Gilliland,  
12/30, p.56

Motor balancing device, Pulsar  
Synchronized Unbalance Indica-  
tor, 8/19, p.180

Oldsmobile's Dynamic 88, 10/22,  
p.134

Opel Caravan, price, 12/30, p.46  
Pontiac:

Automated foundry line, cast-  
ing engine blocks, 12/2, p.122  
Crankshaft line with a new  
look, 11/11, p.114

Publicity plan on UAW demand,  
11/11, p.54

Sales prediction, Ragsdale, 9/2,  
p.94

Strike foreseen, 12/2, p.53  
Vauxhall prices set by Pontiac,  
9/9, p.94

Tax writeoff on missile plant,  
8/5, p.70

**General Pressed Metal Corp.:**

Sold, B, 7/22, p.90

**General Products Corp.:**

Automatic shear, IE, 8/26, p.97

**General Radio Co.:**

Versatile presses cut setup time  
(hydraulic presses), 7/15, p.11

**General Steel Castings Corp.:**

Avonmore adds facilities, 7/1,  
p.81

**General Vacuum Corp.:**

Formed, B, 12/9, p.146

**Gibson Electric Co.:**

Moves, B, 9/16, p.115

**Giddings & Lewis Machine Tool Co.:**

Kaukauna Div.: Binary code tap  
control, 10/28, p.131  
Radial drill, Cincinnati Bickford  
IE, 10/14, p.147



**Isholt Machine Co.:**  
Forms English subsidiary, B, 7/8, p.87

**Leason Works:**  
Quenching press, IE, 11/18, p.217

**Golden Anderson Valve Specialty Co. Inc.:**  
Marketing philosophy, rejuvenation pays off, 11/4, p.75

**Goodrich Co., B. F.:**  
Conveyor belt for foundry hot sand, 9/23, p.130

**Goodrich Industrial Products Co.:**  
Quick coupling, IE, 9/16, p.162  
Transmission belt, IE, 10/14, p.164

**Goodyear Tire & Rubber Co.:**  
Air springs for autos, 10/28, p.114

**Gould-National Batteries Inc.:**  
Buys Nickel Cadmium Battery, B, 9/23, p.114

**Graham Transmissions Inc.:**  
Punch card control, IE, 8/5, p.128

**Graton & Knight Co. Inc.:**  
Buys Warren Belting, 10/28, p.155

**Gray Equipment Co.:**  
Index table, IE, 12/2, p.130  
Machine drives studs, IE, 9/2, p.170

**Great Lakes Carbon Corp.:**  
Extrusion press, 10/28, p.147  
Pilot plant at Niagara Falls, 7/8, p.83

**Greenfield Tap & Die Corp.:**  
Merger, 12/16, p.92

**Greenlee Bros. & Co.:**  
Borer machines diecastings, IE, 12/30, p.71

**Grieder Industries Inc.:**  
Cutoff, IE, 12/9, p.220

**Gries Reproducer Corp.:**  
Nylon screws, TO, 8/12, p.123

**Grieve-Hendry Co. Inc.:**  
Automated oven, IE, 9/2, p.172

**Gulf Oil Corp.:**  
Cutting oil, IE, 9/2, p.177

**Gulton Industries Inc.:**  
Buys CG Electronics, B, 7/29, p.104  
Buys Titania Electric, B, 10/28, p.155  
Ceramic coating protects aluminum from high temps, 9/16, p.135  
Cleveland seminar: What's new in ultrasonics, 7/8, p.95  
Forms new div., B, 12/2, p.81  
Ultrasonic cleaner, IE, 8/12, p.154

## H

**H & B American Machine Co.:**  
Buys Big Boy Mfg., 12/9, p.149

**HPL Mfg. Co.:**  
Short run dies, 12/2, p.94

**Haile Mines Inc.:**  
Acquiring Samuel & Co., B, 8/12, p.110

**Hamilton Tool Co.:**  
Die transfer table, IE, 11/18, p.222

**Hammel-Dahl Co.:**  
Expands for missiles, 12/9, p.145

**Hammond Machinery Builders Inc.:**  
Belt grinder, IE, 9/9, p.147; 11/4, p.151

**Handy & Harman:**  
Expands, 12/9, p.118

**Hankison Corp.:**  
Condensing filter, IE, 8/12, p.158

**Hanna Engineering Works:**  
Pilot air valve, IE, 9/2, p.166

**Hannifin Corp.:**  
Sold, B, 10/14, p.98

**Hanson Bros.:**  
Installs spinning lathe, 11/18, p.137

**Hanson-Van Winkle-Munning Co.:**  
Portable filter, IE, 8/19, p.202

**Harbison-Walker Refractories Co.:**  
Research center, 9/2, p.115

**Hardinge Co.:**  
Balling drum machined, 11/25, p.87

**Harper Co., H. M.:**  
Attitude survey, 12/9, p.116

**Harris Foundry & Machine Co.:**  
Hydraulic mechanized shear, 11/4, p.70

**Harris-Intertype Corp.:**  
Buys Gates Radio, 11/25, p.87

**Harsco Corp.:**  
Buys Ainsworth, B, 9/9, p.98

**Hart Reduction Pulley Co.:**  
Reduction pulley, IE, 8/26, p.94

**Hartford Special Machinery Co.:**  
Double-end machine, IE, 11/18, p.222

**Hartley Controls Corp.:**  
Casting counters, IE, 11/4, p.154

**Harvel Co.:**  
Surface grinder, IE, 12/9, p.216

**Harvey Aluminum:**  
Adds magnesium forgings, 10/21, p.65  
Extrusion press—huge, B, 11/4, p.93  
Furniture tube, IE, 11/4, p.148

**Haughton Elevator Co.:**  
Merges, B, 10/14, p.98

**Haveg Industries Inc.:**  
Buys Lithgow, B, 10/28, p.155

**Heidrich-Nourse Co.:**  
Repeating hammer, IE, 9/2, p.164

**Heil-Quaker Corp.:**  
Formed, 12/9, p.145

**Heintz Mfg. Co.:**  
Merger, 9/30, p.74

**Heli-Coil Corp.:**  
Wire thread inserts for die holders, 12/2, p.116

**Hendey Machine Div.:**  
Lathes—32 spindle speeds, IE, 9/23, p.143

**Henry Equipment Co.:**  
Renamed, B, 7/22, p.89

**Heppenstall Co.:**  
Tongs, IE, 12/9, p.218

**Herman Stone Co.:**  
Granite riser blocks, IE, 12/2, p.129

**Herrick Mfg. Corp., C. B.:**  
Welding manipulator, IE, 9/16, p.166

**Hevi-Duty Electric Co.:**  
Muffle furnace, IE, 11/4, p.152  
Vacuum furnace, IE, 9/2, p.173

**Hewitt-Robins Inc.:**  
Vibrating feeder, IE, 12/16, p.128

**Hidden Splendor Mining Co.:**  
Merger, 9/2, p.82

**High Vacuum Equipment Corp.:**  
Annealing furnace, IE, 10/28, p.242

**Highway Trailer Co.:**  
Sold, B, 12/2, p.89

**Hill Inc., Walter P.:**  
Combination punch press and bender, IE, 9/9, p.143  
Cutoff machine, IE, 11/4, p.154  
Drilling machine, IE, 11/25, p.120

**Hobart Bros. Co.:**  
Carbonaire, cutter, IE, 9/30, p.96  
Carryall for inert gas weld, IE, 12/9, p.223  
Rutile produced, separates mineral from Florida sands, 9/2, p.97

**Hoglund Engineering & Mfg. Co.:**  
Wheel dresser, IE, 9/9, p.147; 11/4, p.148

**Holex Inc.:**  
Formed, B, 11/18, p.137

**Hooker Electrochemical Co.:**  
Canadian plant, 10/28, p.150  
Research center, B, 11/11, p.87

**Hoover Ball & Bearing Co.:**  
Builds plant, B, 7/8, p.90  
Teflon bearing seals, TO, 9/16, p.129

**Horizons Inc.:**  
Graphite coating, TO, 11/11, p.109

**Hotpoint Co.:**  
Appliance outlook, next ten years, 12/2, p.56  
Community in Illinois, teams with Texas firm, 8/5, p.49

**Houck & Greene Steel Co.:**  
Formed, B, 8/19, p.143

**Hough Co., Frank G.:**  
Towing tractors, IE, 9/9, p.149

**Howard Industries Inc.:**  
Buys Westinghouse motor line, B, 12/16, p.90

**Hubbard & Co.:**  
Research center, 9/2, p.91

**Hubbell Metals Inc.:**  
Buys Graco, B, 10/28, p.155

**Hudson Automatic Machine & Tool Co.:**  
Rotary power tool, IE, 11/25, p.117

**Hufford Corp.:**  
Joggler, IE, 10/7, p.208

**Hughes Aircraft Co.:**  
Guided missile plant site, 11/18, p.110

**Hughes Tool Co.:**  
Antitrust suit, patent with German firm, 8/12, p.74

**Hull & Co. Inc., R. O.:**  
Zinc brightener, IE, 11/4, p.158

**Hunter Spring Co.:**  
Sold, B, 9/23, p.114

**Hupp Corp.:**  
Rays thaw iron ore, IE, 8/19, p.220

**Hustler Corp.:**  
Electric lift truck, IE, 8/5, p.124

**Hutton Fabricating Mfg. Corp.:**  
Open hearth frames, IE, 9/16, p.175

**Hydraulic Press Mfg. Co.:**  
Buys Henry & Wright, B, 8/19, p.143  
Open gap horn press, IE, 9/23, p.144

**Hydro-Line Mfg. Co.:**  
Hydraulic cylinders, IE, 8/12, p.161

**Hyster Co.:**  
Abrasive blast cleans weldments, 12/23, p.78

## I

**I-F Mfg. Co.:**  
Rubber conveyor belt for sand from hot shakeout, 9/23, p.130

**I-T-E Circuit Breaker Co.:**  
Circuit breakers, IE, 12/2, p.127

**Illinois Tool Works:**  
Gear generating machine, IE, 11/25, p.122

**Industrial Combustion Inc.:**  
Buys Conversion Burner, 12/30, p.52

**Industrial Enterprises Inc.:**  
Acquisitions, B, 7/29, p.104  
Buys Philadelphia Chain Block, 12/16, p.92

**Industrial Filtration Co.:**  
Coolant filtration, IE, 9/30, p.97

**Industrial Forge & Steel Inc.:**  
Welding solves down time problem: P. H. Lessard, 8/12, p.144

**Industrial Products Co.:**  
Welding shields, IE, 11/4, p.152

**Ingersoll-Rand Co.:**  
Topping turbine skims steam, blast furnace blowing, 11/18, p.188

**Inland Steel Co.:**  
Builds sintering plant, Indiana Harbor, 8/19, p.113  
Ore bridge contract, 11/25, p.87

**Instron Engineering Corp.:**  
Tensile tester, IE, 9/16, p.172

**Intercontinental Electronics Corp.:**  
Spectrographic analyzer, 10/28, p.239

**Interlake Iron Corp.:**  
Distributors on blast furnaces, TO, 10/7, p.161

**International Business Machines Corp.:**  
Austempering is mechanized: R. S. McFall, 9/23, p.125  
Computer, IE, 10/14, p.164  
Texas plant, supplies div., 12/23, p.37

**International Harvester Co.:**  
Case history on cathodic protection of underground piping, electrical system, 8/12, p.128  
Molybdenum disulfide lubricant, 12/30, p.68

**International Nickel Co.:**  
Ductile iron research on high temps., 7/8, p.96  
Surveys ductile iron use, 12/16, p.110

**International Nickel Co. of Canada:**  
Railroad opens Manitoba mines, 10/28, p.124

**International Steel Co.:**  
Buys Lindsay Structure, B, 7/22, p.96

**International Telephone & Telegraph Co.:**  
Missile production, 8/5, p.49  
Standards lab for testing, B, 7/8, p.82

**Intertectics Inc.:**  
New joining material, 10/21, p.91

**Ipsen Industries Inc.:**  
Heat treating furnace, IE, 10/28, p.236

## J

**Jefferson Electric Co.:**  
Buys Electronic Products, 11/11, p.95

**Jeffrey Mfg. Co.:**  
Metal turnings feeder, IE, 7/1, p.92  
Overhead sand hopper, IE, 7/8, p.120

**Jergens Tool Specialty Co.:**  
Steel studs, IE, 7/29, p.156

**Jersey Mfg. Co.:**  
Form and punch shaper, IE, 12/30, p.72



**Jessop Steel Co.:**

Small steelmaker prospers, Rackley reports, 12/16, p.63

**Johansson Co., I. O.:**

Radial drill, IE, 10/28, p.241

**Johnson Bronze Co.:**

Buys Apex Bronze, 12/2, p.89  
Research lab, B, 7/15, p.81

**Jonaac Inc.:**

Forms two companies, 11/4, p.71

**Jones & Lamson Machine Co.:**

Thread grinder for Watervliet Arsenal, 7/29, p.116  
Tool checkers, TO, 9/16, p.129

**Jones & Laughlin Steel Corp.:**

Aliquippa electricweld pipe mill, 9/9, p.91  
Aliquippa oxygen furnaces, 12/30, p.62; 12/16, p.54  
Autocar trucks carry steel from rolling mill, 8/5, p.107  
Buys Cold Metal Products, 7/15, p.88  
Buys Lebanon, Ind., plant, B, 9/23, p.114  
Buys Texas site, 7/29, p.66  
Cold finished steel bar mill, 7/15, p.54  
Cold reducing mill, Cleveland, 12/23, p.38  
Container plant, B, 11/18, p.137  
Equipment for Louisville, O., plant, 12/23, p.62  
Map shows plants in U. S., growth in capacity, 8/12, p.171  
Water pumps installed, 12/2, p.58

**Jordan Co. Inc.:**

Sequentrol, IE, 8/19, p.209

**K****Kaiser Aluminum & Chemicals Corp.:**

Aluminum "dream cars," 8/5, p.70  
Basic refractories capacity upped, 8/12, p.136  
Drawing technique aims at can market, 11/4, p.71  
Furnace for large aluminum plates, 9/16, p.107  
Panama contract, ore exploration, 12/2, p.160  
Plate stretcher, Ravenswood, 9/23, p.107  
Plate stretcher, wider and thinner, 12/23, p.77  
Refractory gunning repairs open-hearth, 10/21, p.88

**Kaiser Steel Corp.:**

Electrostatic precipitators remove smoke particles, 12/30, p.37  
Expands to meet future: More steel for West Coast, 7/29, p.165  
Pipe plant, Napa, Calif., expands, 11/18, p.110  
Plate mill to make oil line pipe, 7/1, p.28

**Kallins Co., J. M.:**

Profiling duplicator, IE, 8/12, p.152

**Kaukauna Machine & Foundry:**

Binary code tape control, 10/28, p.131

**Kawecki Chemical Co.:**

Alloy introduced, B, 11/11, p.87

**Kelite Corp.:**

Steam cleaners, IE, 8/19, p.202

**Kelsey-Hayes Co.:**

Buys Control Specialists, B, 8/12, p.110  
Merging Heintz Mfg., 9/30, p.74  
Raising heavy parts with jacks and blocking, 9/9, p.136

**Kenco Mfg. Co.:**

Punch press, IE, 7/8, p.120  
Triple punch press, IE, 9/23, p.146

**Kennametal Inc.:**

Abrasive grit, IE, 11/18, p.222  
Adhesive, hard surfacing, TO, 11/18, p.151  
Enlarges facilities, B, 7/22, p.90

**Kennecott Copper Corp.:**

Buys refinery site, B, 11/11, p.90

**Kidde & Co., Walter:**

Fire extinguishers, IE, 8/5, p.122

**Kincaid-Osborn Electric Steel Foundry Co.:**

D molds aid foundry, 11/11 p.110

**King-Seeley Corp.:**

Buys Queen Products, etc., 11/25, p.87

**Kinney Engineers Inc., S. P.:**

Butterfly valves, IE, 8/5, p.130

**Koch Refrigerators Inc.:**

Spotwelder speeds assembly, 12/16, p.108

**Kodiak Corp.:**

Rocket tubes, 11/25, p.53

**Koehring Co.:**

Henry & Wright Div. acquired by Hydraulic Press, 8/19, p.143

**Kolene Corp.:**

Salt bath works four ways, specialty steel mill, 9/16, p.138

**Koppers Co.:**

Coal tar plant, TO, 8/5, p.87  
Continuous casting hope, 11/4, p.72  
Republic contract, 8/5, p.83

**Korfund Co. Inc.:**

Spring mounts, IE, 12/23, p.85

**Kurt Orban Co.:**

Forging manipulator, IE, 7/1, p.90

**Kwikset Locks Inc.:**

Sold, B, 7/22, p.90

**L****L & B Welding Equipment Inc.:**

Vacuum unit, IE, 8/19, p.209

**Ladish Co.:**

Titanium pipe fittings, IE, 12/16, p.126

**Lake Erie Machinery Corp.:**

Stretcher for extrusions, IE, 8/12, p.151

**Lake Shore Industries Inc.:**

Contour mill cuts airfoil shapes from bar stock, 11/18, p.188

**Lamson Mobilift Corp.:**

Moves inquiry dept., B, 7/1, p.62

**Landis Machine Co.:**

Pipe cutters, IE, 7/29, p.158

**Larkin Associates Inc.:**

Forms research firm, 12/2, p.86

**La Salle Steel Co.:**

Cold worked steel: How to upgrade cold-finished steel, 12/23, p.66  
Something new in cold bars, copper-controlled chemistry, 9/9, p.163

**Latrobe Steel Co.:**

New mill (cogging) will roll tough steels, missile use foreseen, 12/2, p.99

**Lebanon Steel Foundry:**

Faster CO<sub>2</sub> cores: D. E. Ekey and E. G. Vogel, 9/2, p.150

**LeBlond Machine Tool Co., R. K.:**

Boring machine, IE, 11/4, p.148  
Production lathes, IE, 11/18, p.218  
Regal lathes, IE, 10/14, p.143

**Lee Co., K. O.:**

Grinders, IE, 8/12, p.154

**Lee Wilson Engineering Co.:**

Annealing symposium (prepared atmospheres), 11/18, p.160  
Coil loading, stripping machine, IE, 11/11, p.139

**Leeds & Northrup Co.:**

pH controls rinse for bright dip unit, 12/9, p.203  
Optical pyrometer, IE, 9/30, p.97

**Leffel & Co., James:**

Specialization pays off, 8/5, p.58

**Lehigh Inc.:**

Sells to York Div., 11/4, p.96

**Leland Inc., G. H.:**

Stepping motor, IE, 8/19, p.206

**Le Maire Machine Tool Co.:**

Building block program, 12/30, p.61

**Lenox Instrument Co.:**

Borescope, IE, 7/8, p.122

**Leonard Precision Products Co.:**

Tube bender, IE, 10/7, p.205

**Leschen Wire Rope: See Porter****Leslie & Co. Ltd., A. C.:**

Cranes stretch warehouse space, 7/1, p.80

**LeTourneau Co., R. G.:**

Strap welds reported, 12/30, p.60

**Lewis Machine Co.:**

Wire straightener, IE, 10/28, p.241

**Lewis-Shepard Products Inc.:**

Electric trucks, IE, 7/1, p.90  
Fork lift truck, IE, 10/14, p.144  
JackStacker handles dies, IE, 11/18, p.225

**Lewis Welding & Machine Corp.:**

Wet blast machine gives liquid abrasive cleaning, 12/16, p.106

**Lincoln Electric Co.:**

Portable arc welder, IE, 10/14, p.143

**Lindberg Engineering Co.:**

Aluminizing valves, TO, 9/23, p.117  
Vacuum report, IE, 8/12, p.152

**Linde Co.:**

Flame plating, TO, 7/29, p.111  
Oxyacetylene welder, IE, 7/29, p.159  
Space sheets spotwelded, 11/4, p.130  
Strike ends, 7/1, p.27  
Welding blowpipe, 9/9, p.149

**Ling Electronics Inc.:**

Buys American Microwave, B, 9/2, p.126

**Link-Belt Co.:**

Los Angeles plant, B, 10/7, p.155

**Liquid Carbonic Corp.:**

Merges, 10/14, p.101

**Lite-Line Industries:**

Magnesium welded faster, new system, 9/23, p.118

**Lockheed Aircraft Corp.:**

Civilian market sought, 7/22, p.51  
Missile backlogs, 12/16, p.53  
Milling machine "Variax" works five axes, 7/15, p.114  
Production tech. for supersonic F-104A Starfighter, 12/2, p.100  
Vacuum plating cadmium, 9/9, p.134

**Lodge & Shipley Co.:**

Lathes, IE, 12/16, p.124

**Logemann Bros. Co.:**

Baler handles bulky scrap, 7/22, p.113

**Loma Machine Mfg. Co.:**

Extrusion stretchers, IE, 9/9, p.146  
Tubing processing line for Chase Brass, 9/9, p.125

**Lombard Corp.:**

Stretcher for large extrusions, pic., 8/12, p.74

**Lone Star Steel Co.:**

Earnings, 10/21, p.31

**Lucifer Furnaces Inc.:**

Salt bath furnaces, IE, 12/9, p.228

**Lukens Steel Co.:**

Clad pipe welded, 12/30, p.55

**Lykes Bros. Steamship Co. Inc.:**

Maritime contract, 8/12, p.68 p.68

**Mc****MacDermid Inc.:**

MacDermid Pacific formed, 9/16, p.110

**McDermott Co.:**

Machinery mount, IE, 12/16, p.128

**McDowell Co.:**

Conveyor scale, IE, 11/11, p.150

**McGraw-Edison Co.:**

Buys Allover Mfg., B., 9/9, p.98

**McJunkin Corp.:**

Buys Chandler-Boyd, B, 9/30, p.74

**McKay Co.:**

Electrode quality depends on coating: H. F. Reid Jr., 9/30, p.84

**M****Mack Trucks Inc.:**

Forms electronics div., B, 12/3, p.141

**Magnaflux Corp.:**

Magnetic inspection, IE, 10/28, p.244  
Magnetic particle tester, IE, 8/5, p.118  
Powder blower, IE, 7/1, p.92  
Tester measures thickness, 12/2, p.89

**Magnethermic Corp.:**

Induction heaters, IE, 7/1, p.92 7/22, p.125

**Magnetic Engineering & Mfg. Co.:**

Magnetic pulley, IE, 12/30, p.72

**Magnus Chemical Co. Inc.:**

Batch cleaner, IE, 9/23, p.144  
Choose the right lubricant: Leonard Salz, 10/14, p.132

**Mallory & Co. Inc., P. R.:**

Buys Milli-Switch, B, 12/2, p.89

**Mallory-Sharon Metals Corp.:**

New firm formed by three, 9/9, p.67  
New titanium alloys, TO, 9/16, p.129  
Titanium production surges ahead: F. H. Vandenberg, 7/29, p.152  
Vacuum heat treating furnaces, 7/15, p.109

**Man-Au-Cycle Corp.:**

Thread cutting lathe, IE, 10/28, p.240

**Mannesmann Tube Co. Ltd.:**

Seamless tube plant, Sault Ste. Marie, 7/8, p.104  
Gear drives speed reducers, 8/12, p.150

**Markem Machine Co.:**

Marking machine, IE, 9/30, p.96

**Marsellus Vault & Sales Co.:**

Buys General Pressed Metal, B, 7/22, p.90

**Martin Co.:**

Cooling airborne electronics, 9/16, p.74  
Machine (for aircraft wings) does variety of jobs, 9/2, p.136  
Making tape control work: L. E. Laux, 11/18, p.182  
Missile plant, Fla., 12/30, p.37  
Tips on titanium milling: A. L. Winkler, 10/7, p.176 and 9/23, p.140  
Testing facility, B, 7/8, p.87  
Vacuum brazing experiments, 7/8, p.81  
Vacuum drilling jig, 11/18, p.178

**Massey-Harris-Ferguson Inc.:**

Reorganizes mfg. operations, 12/2, p.85



**Master Mechanics Co.:**

Floor surfer, IE, 11/18, p.218

**Mattison Machine Works:**

Pinch roll grinders finish flat stock, IE, 9/9, p.137  
Surface grinder and fixtures finish clutch cone, 8/26, p.81  
Surface grinder, IE, 11/11, p.139

**Mayes Tool Co.:**

Gage checks holes, IE, 11/25, p.123

**Maysteel Products Inc.:**

Buys Magnesium Products, 10/28, p.153

**Mendon Research & Development Co.:**

Buying National Brass, B, 8/19, p.143

**Mercast Corp.:**

Buys Gray & Huleguard, B, 11/25, p.87

**Mercury Molding Machinery Inc.:**

Organized, B, 7/1, p.61

**Metal & Thermit Corp.:**

Chromium plating, crack free process, 8/19, p.173  
Copper plating process, IE, 10/21, p.103  
Rutile market entered, 12/2, p.58; 12/30, p.52

**Metallizing Co. of America:**

Borocote resists molten aluminum, TO, 9/30, p.77

**Metalplate Co.:**

How to cut galvanizing costs: E. R. Hauser, 7/8, p.108

**Metals & Alloys Corp.:**

Formed, B, 10/21, p.71

**Metals Disintegrating Co. Inc.:**

Dust collector, IE, 8/12, p.158

**Michigan Chemical Co.:**

Buys Petrochemicals, B, 9/9, p.98

**Michigan Production Engineering Co.:**

Testing machine, IE, 8/19, p.214

**Michigan Tool Co.:**

Cone-Drive gears in Mannesmann tube mill, 8/12, p.150  
Gear checker, IE, 11/4, p.145  
Gear hobber, IE, 10/7, p.208  
Gear motors, IE, 9/9, p.156; 10/14, p.158  
Gear-O-Matic machine, basket loaded, IE, 7/22, p.129  
Loader feeds gear shaper, IE, 9/30, p.93  
Part feeder speeds hobbing, 8/26, p.89  
Parts elevator, IE, 12/9, p.218  
Storage unit, IE, 10/14, p.150

**Mid-Century Instrument Corp.:**

Computer center, 12/2, p.65

**Midland-Ross Corp.:**

Merger, 10/28, p.153; 12/23, p.63

**Midland Steel Products Co.:**

Welding speeded with CO<sub>2</sub> (auto frames), 7/1, p.43

**Milton Roy Co.:**

Buys Anders-Lyken, B, 8/12, p.107

**Miniature Precision Bearings Inc.:**

Buys Split Ballbearing, 7/15, p.89  
Expands, B, 8/19, p.135

**Mine & Smelter Supply Co.:**

Expands, B, 7/22, p.89

**Mineral Exploration Corp.:**

Plans smelter, 9/2, p.90

**Minneapolis-Honeywell Regulator Co.:**

Switch plug-ins, IE, 12/2, p.130  
Valve div. moves, B, 8/19, p.140

**Minnesota Mining & Mfg. Co.:**

Coated abrasive wheels, IE, 9/2, p.163  
Film: How to finish steels, 9/16, p.158  
Nuclear lab, 9/16, p.91

**Minster Machine Co.:**

Embossing presses, IE, 9/16, p.164  
Single point press, IE, 12/16, p.128  
Straight side press, IE, 7/8, p.120

**Misco Precision Casting Co.:**

Three new ways to make precision castings, 7/15, p.107

**Mississippi Valley Structural Steel Co.:**

Buys Lansing, Mich., firms, B, 8/19, p.146  
Buys Tenn. firms, 7/22, p.90

**Model Machine Co. Inc.:**

Deburring machine, IE, 9/16, p.172

**Modern Engineering Service Co.:**

Index and pierce machine, IE, 12/16, p.126

**Modern Industrial Engineering Co.:**

Slot deburrer, IE, 11/4, p.156

**Monarch Machine Tool Co.:**

Lathe for special turning has remote control, IE, 8/12, p.151  
Tips on turning heat treated steels, 11/25, p.94

**Monroe Auto Equipment Co.:**

Induction heating hardens shock absorber shafts, 12/9, p.128  
UAW fights move to Ga. plant, 8/5, p.69

**Motch & Merryweather Machinery Co.:**

Rotary indexing table, Avey Div., 10/21, p.91  
Way-type unit, IE, 7/1, p.91

**Motor Wheel Corp.:**

Vertical storage units, 12/16, p.74

**Murray Corp. of America:**

Buys Syracuse plant (Easy Laundry), 11/25, p.74

**N****NRC Equipment Corp.:**

Booster pump, IE, 9/16, p.175  
Vacuum ball valves, IE, 7/1, p.91  
Vacuum coater, IE, 10/7, p.205  
Vacuum furnace, IE, 9/9, p.155; 10/28, p.250

**Nankervis Co., George L.:**

Sold, B, 12/23, p.63

**Napco Industries:**

Buys Detroit Bevel, 10/14, p.98

**National Automatic Tool Co. Inc.:**

Driller, four-station, IE, 7/22, p.125  
Feed rate indicator, IE, 7/8, p.118  
Frame driller, IE, 9/30, p.94  
Transfer machine, IE, 8/19, p.206

**National Broach & Machine Co.:**

Gear classifier, IE, 9/2, p.164  
Gear honer, IE, 12/23, p.88  
Gear loader, IE, 12/9, p.216  
Rotary shaving machine, IE, 9/2, p.163

**National Carbon Co.:**

Develops new process, 12/16, p.54  
Expansion finished, 8/26, p.41  
Heat exchangers, IE, 10/21, p.107

**National Cylinder Gas Co.:**

CO<sub>2</sub>-shell molding combined, 9/23, p.117  
Rail welder, Swiss—designed, 8/19, p.113  
Scarfing torch, three-hose, IE, 8/19, p.201

**National Distillers & Chemical Corp.:**

Buys National Petro-Chem, 12/23, p.63  
Forms metals firm with (3), 9/9, p.67

**National Dust Collector Corp.:**

Dust collector, IE, 10/7, p.219

**National Engineering Co.:**

Organizes conveyor unit, B, 11/18, p.137

**National Machinery Co.:**

Tips on turning heat treated steels, 11/25, p.94

**National Shipyards & Steel Corp.:**

Expands, B, 10/21, p.65

**National Steel Corp.:**

Getting more iron from blast furnaces, 12/9, p.164  
Humphrey sees more expansion, 11/11, p.64  
Weir dies, 7/1, p.37

**National Supply Co.:**

Buys Howard Electric, B, 8/12, p.107  
Merging, 12/30, p.19  
Planer converted into three dimensional, tracer controlled milling machine, 12/2, p.118  
Spang-Chalfant expands, 7/15, p.57

**Nelson Stud Welding:**

Welding gun, IE, 10/28, p.246

**New Method Steel Stamps Inc.:**

Radial marking, IE, 7/15, p.141

**Newton Insert Co.:**

Threaded insert, IE, 9/2, p.176

**Newtown Tool & Die Inc.:**

Reorganizes, B, 10/21, p.65

**New York Air Brake Co.:**

Modified martemp cuts warping: E. C. Wallace and H. E. Crouse, 12/2, p.97

**Niagara Machine & Tool Works:**

Power groove, IE, 11/4, p.148  
Ring and circle shear, IE, 10/14, p.143  
Wrap-around crown of press brake frame, IE, 7/15, p.137

**National Machinery Co.:**

Machine makes odd-shaped bolts, 9/16, p.144

**Nicholson-Berger Co. Inc.:**

Multiple spindle head, IE, 10/7, p.222

**Noble Co.:**

Plate handler, IE, 9/23, p.143

**Noble & Westbrook Mfg. Co.:**

Marking machine, IE, 8/19, p.206; 9/23, p.146

**Norlegest Corp.:**

Formed, B, 12/30, p.53

**North American Aviation Inc.:**

Film used to check accuracy of large parts, 7/15, p.110  
King-size casting from Alcoa, 10/7, p.198  
Layoff due to Navaho missile cancellation, 7/22, p.51

**North American Mfg. Co.:**

Burner, IE, 8/5, p.129

**North American Steel Co.:**

Iowa steel mill write-off sought, 8/5, p.62  
ODM order kills hopes, 9/9, p.58

**Northeastern Steel Corp.:**

Carpenter buys, renamed, 12/2, p.81  
Salt bath works four ways, 9/16, p.138

**Northern Engineering Works:**

Aluminum Crane, IE, 11/25, p.123  
Hoist controls, IE, 12/9, p.219

**Norwalk Thermostat Co.:**

Formed, B, 11/4, p.96

**Nuclear Metals Inc.:**

Private ownership, 9/30, p.73

**O****Oakite Products Inc.:**

Cleaning compound, IE, 10/28, p.249

**Ogden Corp.:**

Buys firms, 10/14, p.98

**Oglebay Norton & Co.:**

Merger of firms, 10/7, p.152

**Ohio Electric Mfg. Co.:**

Buys Homer Mfg., 8/19, p.143

**Ohio Seamless Tube: See Copper-weld Steel****Ohio Steel Foundry Co.:**

Rollmaker forges ahead, Mr. Galvin reports, 9/23, p.89

**Oil-Rite Corp.:**

Pneumatic sprays, IE, 8/26, p.97

**Olin Mathieson Chemical Corp.:**

Expansion plans, B, 7/15, p.85  
Producing high-engine aircraft fuel, 7/15, p.56

**Oliver Corp.:**

Farquhar gap press, IE, 7/1, p.91  
Industrial div. moves, 10/28, p.147

**Olofsson Corp.:**

Boring machine, IE, 9/9, p.150

**Olson Engineering Co.:**

Builds spheroidizing furnace, 12/9, p.208

**O'Neil-Irwin Mfg. Co.:**

Punch press, IE, 7/15, p.138

**Onsrud Machine Works Inc.:**

Milling machine for aircraft wings, 9/2, p.136

**Optical Gaging Products Inc.:**

Contour projector, IE, 8/26, p.90

**Osco Steel Co.:**

Teamster union squeeze, 12/9, p.111

**P****Packard-Studebaker Corp.:**

Hawk introduced, 10/21, p.52

**Paltier Corp.:**

Plastic pallets, IE, 7/15, p.142

**Pandjiris Weldment Co.:**

Seamer welds tanks, IE, 8/19, p.201  
Manipulator, IE, 7/1, p.90  
Positioners, IE, 11/4, p.162

**Pangborn Corp.:**

Rotoblast cleaner, IE, 10/28, p.246

**Pannier Corp.:**

Offset tube printer, IE, 11/4, p.146

**Pantex Mfg. Corp.:**

Buys Spinform, B, 11/4, p.98

**Parker Appliance Co.:**

Accumulators, IE, 9/2, p.177  
Buys Hannifin, B, 10/14, p.98

**Parker-Kalon Div.:**

Tinnerman license to make fastener feeding equipment, 10/21, p.65

**Peerless Machine Co.:**

Speed saw, IE, 10/7, p.210

**Pekay Machine & Engineering Co. Inc.:**

Mixer-Muller, taconite conveyor mixer, 12/2, p.126

**Peninsular Distributing Co.:**

Buys Rayl, B, 11/11, p.95

**Peninsular Metal Products Corp.:**

Buys Nankervis, 12/23, p.63

**Pennsylvania Engineering Corp.:**

Teeming ladle, IE, 9/9, p.146



**Pennsylvania Malleable Iron Corp.:**  
Landisville foundry, 12/16, p.87

**Perkin-Elmer Corp.:**  
Optical comparator, IE, 10/14, p.153

**Perkins Machine Co.:**  
80-ton press, IE, 11/11, p.152

**Perry Co.:**  
Hydraulic presses, IE, 10/14, p.156

**Pfandler-Permutit Inc.:**  
Merger, 10/14, p.98

**Phoenix Iron & Steel Co.:**  
Adds oxygen plant, B, 8/19, p.113

**Phoenix Mfg. Co.:**  
Sold, B, 8/5, p.84

**Pines Engineering Co. Inc.:**  
Bender, IE, 10/28, p.235; 11/11, p.140

**Pitney-Bowes Inc.:**  
Plating dept., B, 12/2, p.81

**Pittsburgh-Des Moines Steel Co.:**  
Fabricating plant, Calif., 12/30, p.53

**Pittsburgh Plate Glass Co.:**  
Builds plant, B, 11/18, p.110

**Pittsburgh Screw & Bolt Corp.:**  
Builds fastener plant, 7/22, p.59  
Buys Southington Hardware, B, 8/5, p.84

**Portage Machine Co.:**  
Horizontal milling machine—34 speeds, IE, 9/16, p.161

**Porter Company Inc., H. K.:**  
Buys Cleveland Hardware, 8/5, p.50  
Leschen wire drawing mill, 7/8, p.84  
Refractories plant, Ala., 11/18, p.110  
Refractories plant Colo., expands, 8/5, p.83  
Refractory coating, IE, 7/15, p.142

**Porter Inc., H. K.:**  
Hydraulic cutter for steel rods and bars, 8/12, p.151

**Porter Machinery Co., C. O.:**  
Cutoff saw, IE, 8/5, p.120

**Precipitator Maintenance Co.:**  
Cleans electrostatic precipitators, 8/19, p.164

**Precision Castparts Corp.:**  
Casting, molding plant, B, 7/8, p.87

**Precision Piece Parts Inc.:**  
Typical small business, 11/11, p.106

**Press Automation Systems Inc.:**  
Feeder automatic, IE, 10/21, p.104; 11/11, p.140  
Press feeder, IE, 12/9, p.220  
Stamping unloader, IE, 9/30, p.97

**Product Packaging Engineering:**  
Parts packager, IE, 12/16, p.128

**Production Machinery Corp.:**  
Sheet shear, IE, 10/7, p.216  
Vacuum cranes handle sheets, 12/2, p.105

**Propulsion Engine Corp.:**  
Buys Titan Chain Saw, B, 8/12, p.107

**Pullman-Standard Car Mfg. Co.:**  
Subcontracting field, B, 8/19, p.135

## R

**Ramo-Wooldridge Corp.:**  
Develops digital control computer, RW-300, 8/12, p.79

**Rampe Mfg. Co.:**  
Tumbling barrels, IE, 8/26, p.93

**Ramset Fastening System:**  
Steel coils tested, 8/19, p.164

**Rapids-Standard Co.:**  
Materials handling co-ordination: Techniques take over, 10/28, p.125

**Raybestos-Manhattan Inc.:**  
Adhesive for rubber, IE, 8/19, p.214

**Raymond Corp.:**  
Fork truck, IE, 11/18, p.226  
Pallet truck, IE, 9/16, p.179  
Platform truck, IE, 11/25, p.123

**Ray-O-Vac Co.:**  
Merger terms, 9/16, p.112

**Raytheon Mfg. Co.:**  
Spacistor, semiconductor device, TO, 7/29, p.111

**Reading Metals Refining Corp.:**  
Copper refinery plant, 7/8, p.81

**Reed Rolled Thread Die Co.:**  
Thread roller, IE, 12/16, p.124

**Reed Roller Bit Co.:**  
Visual production control at Cleco, 8/12, p.127

**Reeves Steel & Mfg. Co.:**  
Merged, 12/9, p.141

**Regina Corp.:**  
Electrostatic spraying cuts costs, 11/18, p.204

**Reid Metal Products Inc.:**  
Control lock, IE, 12/16, p.124

**Reintjes Co., Geo. P.:**  
Skewback twist for furnace roofs, 9/2, p.146

**Reliable Machine & Mfg. Co.:**  
Throwaway cutters, new milling head, 9/23, p.140

**Reliance Electric & Engineering Co.:**  
Atomic pump, shrinkage weld, 11/25, p.93  
Customer service schools, "students," 9/9, p.73

**Rem-Cru Titanium Inc.:**  
Aluminum-moly titanium alloy, 7/29, p.135  
Crucible sole owner, 11/18, p.140  
Titanium pickling baths, TO, 8/12, p.123

**Renaud Plastics Inc.:**  
Surface plate, IE, 7/8, p.118

**Republic Aviation Corp.:**  
Diversifies, forms commercial contract div., 11/18, p.137  
Missile contracts, 8/26, p.30

**Republic Steel Corp.:**  
Automatic marking semfinished steel, 90-in. slab mill, 11/25, p.100  
Berger Div., bonderizing unit, 7/8, p.84  
Builds plant at Hammond, Ind., culvert div., 8/19, p.113  
Buys Enterprise Aluminum, 9/9, p.94  
Chain div. sold, 10/28, p.150  
Cleveland plant expansion, 12/23, p.38  
Coke ovens replaced, 7/15, p.56  
Cold worked steel bars, copper controlled chemistry, 9/9, p.163  
Fire prevention clinic, 7/15, p.59  
Foremen: Junior brass attend class, 12/16, p.64  
Furnace rolled into place, Buffalo, 8/26, p.36; 9/2, p.135  
Gadsden strip mill, pic., 11/11, p.87  
Hamaker predicts business, 9/9, p.57  
Liberian veep hails ore development, 7/22, p.63  
Pressed Steel, box for hot materials, IE, 11/4, p.156  
Pressed Steel, rack holds barrels, IE, 10/21, p.107  
Single stack annealing gets the nod: H. E. Miller, 11/11, p.118

Topping turbine for blast furnace blowing, skims off steam, 11/18, p.188  
Tubing made by high frequency resistance welding, 10/21, p.86  
Truscon expands, 7/8, p.87

**Research Welding & Engineering Co.:**  
Better welds for missiles, 9/16, p.136

**Reuland Electric Co.:**  
Brake motor, IE, 10/14, p.147

**Revere Copper & Brass Inc.:**  
Extrusion press installed, 8/5, p.104

**Reynolds Metals Co.:**  
1975 aluminum outlook, 12/16, p.54  
Aluminum foil satellite, 10/4, p.69  
Australian subsidiary, 11/11, p.87  
Changes name of plant to Sherwin, 8/26, p.63  
Contract with Esso Standard Oil, aluminum, 9/30, p.40  
Expands facilities, 8/12, p.101  
Research center, B, 10/7, p.147

**Rheem Mfg. Co.:**  
Pilot plant for new products, 12/16, p.102

**Ridley & Co. Inc.:**  
Gunning equipment, 10/21, p.88

**Robbins & Myers Inc.:**  
Motors rerated, IE, 7/1, p.92

**Robertshaw-Fulton Controls Co.:**  
Metal finisher, IE, 9/9, p.150  
Radiation pyrometer, IE, 10/7, p.210  
Renames instrument div., B, 10/21, p.68

**Rockford Machine Tool Co.:**  
Hydraulic slotter, IE, 11/11, p.145  
Planer eliminates manual positioning, IE, 7/8, p.117

**Rockwell Mfg. Co.:**  
European markets, 9/2, p.81

**Roebbling's Sons Corp., John A.:**  
Cable production, B, 7/1, p.61

**Rogers & Co. Inc., Samuel Co.:**  
Knife grinder, traveling table, IE, 9/9, p.137

**Rolled Steel Corp.:**  
Customer office service, 9/2, p.91

**Rollway Bearing Co.:**  
Bearing assembly, IE, 7/8, p.118

**Rome Cable Corp.:**  
Buys testing equipment, 11/18, p.140

**Roper Corp., Geo. D.:**  
Sells subsidiaries, B, 11/18, p.140

**Roper Hydraulics Inc.:**  
Roper pump div. renamed, B, 12/2, p.81

**Ross Engineering Corp.:**  
Midland Steel merger effective, 12/23, p.63

**Ross Operating Valve Co.:**  
Air control valve sales, 12/30, p.20

**Rubber & Asbestos Corp.:**  
Adhesive bonds metals, IE, 12/30, p.74

**Russell, Burdsall & Ward Bolt & Nut Co.:**  
Rules for fastener coatings, TO, 10/14, p.115

**Russell Mfg. Co.:**  
Ultra-speed belt, IE, 9/16, p.172

**Ruthman Machinery Co.:**  
Gusher pump, IE, 9/16, p.179

**Ryan Aeronautical Co.:**  
Chemical baths: New method to clean moly, 11/18, p.158  
Double contour panels spotwelded automatically, 7/15, p.118

Expands Torrance div., 11/18, p.110  
Nickel plating-sulfamate bath is stress-free, 9/30, p.78

**Ryerson & Son Inc., Joseph T.:**  
Opens service plant, 11/11, p.95

## S

**S & S Machinery Co.:**  
Cylindrical grinder, IE, 10/14, p.160  
Radial drills, IE, 10/14, p.166  
Shears, IE, 7/15, p.147

**Sage Equipment Co. Inc.:**  
Troughing conveyor, IE, 9/30, p.96

**St. Lawrence Steel Corp.:**  
Steel plate facilities, 7/15, p.81

**St. Marys Foundry Co.:**  
Air setting speeds coremaking, 7/22, p.120

**Salem-Brosius Inc.:**  
Charging machine, IE, 7/8, p.117  
Lukens contract, 7/29, p.99

**Savage Co., W. J.:**  
Nibbler, IE, 7/1, p.93

**Sciaky Bros. Inc.:**  
Current pickup, IE, 8/12, p.158  
Spot welder, IE, 12/9, p.216

**Scott Paper Co.:**  
Paper wipers, IE, 10/28, p.241

**Scottish Tool, Die & Metal Products Co.:**  
Short run dies, 12/2, p.94

**Scovill Mfg. Co.:**  
Thread inserts for holders—forging dies, 12/2, p.116

**Scully-Jones & Co.:**  
Cutting tool control, IE, 9/25, p.144

**Sealot Corp.:**  
Acquires gage line, B, 11/18, p.137

**Secrest Machine Co.:**  
Drill press, IE, 12/16, p.126

**Selas Corp. of America:**  
Austempering is mechanized: C. A. McFadden, 9/23, p.125  
Brazing machine, IE, 10/28, p.241  
Dehydrators, IE, 9/16, p.172  
Wire furnace, IE, 11/11, p.146

**Selmer Inc., H. A.:**  
Carbide pads aid silver soldering, jigs, 11/25, p.107

**Seneca Falls Machine Co.:**  
Boring machine spindles, IE, 12/9, p.213

**Sentry Co.:**  
Hardening furnace, IE, 10/28, p.242

**Sepore Corp.:**  
1000-ton press has feed table, IE, 11/25, p.124

**Servel Inc.:**  
Sells divisions, B, 8/26, p.63  
Sells air conditioning unit, Ind., 10/7, p.147  
Sells physical assets, plans new "stable" business, 9/2, p.99

**Servomechanisms Inc.:**  
Research center, B, 12/30, p.53

**Sesco Inc.:**  
Feeder cuts off bars, IE, 9/9, p.138  
Gripper feeder, IE, 10/7, p.208

**Seymour Mfg. Co.:**  
Chemical controls plating bath, TO, 7/15, p.103  
Copper plating, IE, 12/30, p.73

**Sharon Steel Corp.:**  
Forms Mallory-Sharon, 9/9, p.67  
Forms product dev. dept., B, 9/30, p.73  
Strap stretcher, IE, 7/1, p.94; 11/11, p.153



**Sheffield Corp.:**

Press Pacer, IE, 12/2, p.130  
 Roller bearing assembly, IE, 7/15, p.141  
 Ultrasonic dental drill, 12/9, p.160  
 Ultrasonic machining, 10/14, p.122

**Shepard & Young Tool Co.:**

Gage for jet blades, IE, 11/18, p.218

**Sheridan Co., T. W. & C. B.:**

Press forms titanium, IE, 10/14, p.160

**Siegler Corp.:**

To make telephone equipment, B, 9/23, p.107

**Signode Steel Strapping Co.:**

Power strapper, IE, 11/4, p.148  
 Strapper is powered, IE, 11/11, p.146  
 Stretcher, IE, 8/5, p.118

**Sleeper & Hartley Inc.:**

Torsion spring machine, IE, 10/7, p.216

**Smith Co., S. Morgan:**

Moves operations, B, 8/19, p.135

**Smith Corp., A. O.:**

Forms tool div., B, 11/4, p.93  
 Steel rule dies catch on, 7/22, p.100  
 What glass can offer metal: C. E. Bulloch and Forrest Nelson, 8/19, p.155; TO, 9/23, p.117

**Snyder Tool & Engineering Co.:**

Manifold transfer line for auto parts, 7/22, p.72  
 Transfer machine, IE, 7/15, p.138; 12/23, p.85  
 Special machine, IE, 7/29, p.155; IE, 10/14, p.147

**Solar Steel Corp.:**

Expansion program, 9/30, p.73

**Southeast Machinery Co.:**

Formed, B, 11/25, p.87

**Southern States Iron Roofing Co.:**

Renamed, 10/28, p.147

**Sped-Flo Co.:**

Hot spray unit, IE, 8/5, p.126

**Sperry Products Inc.:**

Attenuation comparator, IE, 10/28, p.245

**Spitfire Tool Co.:**

Lapping machine, IE, 8/5, p.118; 9/30, p.94

**Square D Co.:**

Magnets, IE, 8/5, p.126  
 Motor starter enclosure, IE, 8/12, p.158

**Stainless & Alloy Corp. of America:**

Formed, 9/2, p.115

**Stamco Inc.:**

Scrap cutter, IE, 9/16, p.176  
 Slitters, IE, 9/9, p.155

**Stanat Mfg. Co. Inc.:**

Wire flattening mill, IE, 8/5, p.123

**Standard Oil Co.:**

Industrial greases, IE, 7/1, p.90

**Standard Pressed Steel Co.:**

Automates stamping (coil slitter), 9/9, p.122  
 Buys Columbia Steel Equipment, B, 7/1, p.62  
 Expansion spending, 12/30, p.30  
 Buys Nutt-Shel, B, 10/21, p.76  
 Screw-thread labs, new service, 10/28, p.147  
 Studs for high temp, IE, 8/5, p.123

**State Foundry Co.:**

Air setting speeds coremaking, 7/22, p.120

**Stauffer Chemical Co.:**

Acid plant, B, 8/12, p.79

**Stearns Electric Corp.:**

Magnetic clutch, IE, 9/23, p.146

**Stearns Magnetic Products:**

Plate magnet, IE, 7/22, p.126

**Steel City Testing Machines Inc.:**

Bend tester, IE, 10/7, p.208  
 Compression tester, IE, 7/29, p.156

**Steel Co. of Canada Ltd.:**

Capped steel poured, 8/26, p.78

**Steel Improvement & Forge Co.:**

Leases Lamson & Sessions factory, 9/9, p.100

**Steffan Engineering Co.:**

Contour cutter, pipe ends, 10/21, p.102

**Sterling Electric Motors Inc.:**

Gear motors, IE, 11/11, p.142  
 Variable speed drive, IE, 12/23, p.86

**Stevens Inc., Frederic B.:**

Circuit plating, IE, 8/26, p.90

**Stewart-Warner Corp.:**

Buys National Governor, B, 8/19, p.146

**Stokes Corp., F. J.:**

Compacting press has even density, 12/16, p.116  
 Pilot runs for metal powder parts, 12/16, p.103  
 Vacuum brazing furnace for Martin Co., 7/8, p.81  
 Vacuum degassing, TO, 12/9, p.155  
 Vacuum melt furnace, IE, 10/28, p.249

**Stolper Steel Products Corp.:**

Buys Allen Industrial, 8/26, p.64

**Stroman Furnace & Engineering Co.:**

Aluminum furnaces, IE, 11/18, p.222

**Struthers Wells Corp.:**

Sells metal forming line, B, 10/14, p.93

**Studebaker-Packard Corp.:**

Earnings, prices on Scotsman, Golden Hawk, 11/25, p.74  
 German-built Goggomobil marketed, 10/7, p.114  
 Hardtops, 12/9, p.128  
 Production rally, 7/29, p.85

**Summerville Steel Co.:**

Seattle warehouse, B, 8/5, p.83

**Sunbeam Corp.:**

Diecasting facilities, B, 7/22, p.89

**Sun Chemical Corp.:**

Buys Ansbacher-Siegle, B, 11/4, p.100

**Sunderlin Organization:**

Yardstick for salesmen, 12/30, p.35

**Superior Machine Co.:**

Scrap baling press, IE, 7/22, p.129

**Superior Steel Corp.:**

A new stainless for atomic energy: W. L. Keene, 9/9, p.104  
 Atomic reactor of boron stainless strip, 8/12, p.114  
 Copperweld merges, 11/18, p.137  
 Copperweld proposal, 9/2, p.91

**Superior Tube Co.:**

Lab organization for complex specs: J. W. Wambold, 11/18, p.208

**Surface Combustion Corp.:**

Janitrol expands, B, 11/4, p.66

**Sutherland Refiner Corp.:**

Sold, B, 12/9, p.145

**Sutton Engineering Co.:**

Bar turning machine, IE, 9/16, p.170

Makes English machines, B, 8/19, p.138  
 Rotary swaging machine, IE, 10/14, p.164

**Sylvania-Corning Nuclear Corp.:**

Builds plant, Hicksville, N. Y., 7/22, p.59

**Sylvania Electric Products Inc.:**

Ceramic operations, B, 11/4, p.96  
 Renames chemical div., B, 11/4, p.93

**T****Tappan Stove Co.:**

Diversifies, buys Champion Plastics, 11/18, p.137

**Taylor-Winfield Corp.:**

Buys metal forming line, 10/14, p.93  
 Buys Struthers-Wells machinery lines, 11/25, p.87  
 Lap seam welder, IE, 11/11, p.153

**Templeton, Kenly & Co.:**

Welded tubing, 12/23, p.76

**Tennant Co., G. H.:**

Sweeper, IE, 12/9, p.228

**Tennessee Eastman Co.:**

New adhesive holds 5000 psi, 11/11, p.128

**Tenney Engineering Inc.:**

Temperature test unit, IE, 7/29, p.156

**Texas Electric Steel Casting Co.:**

Expansion program, 7/15, p.86

**Texstream Corp.:**

Buys Graham-Lemunyon, 12/23, p.63

**Thiokol Chemical Corp.:**

Rocket engine plant, 10/21, p.31

**Thomson Industries Inc.:**

Bearing adjusts diameter, IE, 9/23, p.146

**Thompson & Son Co., Henry G.:**

Milband saw, IE, 10/7, p.205

**Thompson Products Inc.:**

Columbium alloys for jets, 12/2, p.93  
 Junior brass attend class, 12/16, p.64  
 Licensed for cold flowing process, 7/15, p.88  
 Power cylinder, IE, 8/26, p.96

**Thompson Tool & Die Inc., J. C.:**

Automatic drill, IE, 12/9, p.223

**Thor Power Tool Co.:**

Buys Drying Systems, B, 8/5, p.84

**Timken Roller Bearing Co.:**

Bucyrus bearings line, special machines and conveyORIZED material handling, 9/30, p.88  
 Bucyrus plant automatic, shipping center—IBM computers, 9/16, p.84  
 Tapered roller bearings, IE, 11/25, p.120  
 Workers see price tags on equipment, 9/23, p.82

**Tinnerman Products Inc.:**

Speed Clip for electric cords, IE, 7/1, p.91

**Titan Chain Saw Co.:**

Sold, B, 8/12, p.107

**Todd-Detroit Steel Process Co.:**

Decolling, leveling, cutting line, 9/2, p.90

**Toledo Scale Co.:**

Merges Houghton Elevator, 10/14, p.98  
 Spring tester, IE, 9/2, p.170

**Topp Mfg. Co.:**

Forms Communications Div., 10/14, p.93

**Torrington Mfg. Co.:**

Springmaker, IE, 10/28, p.249  
 Vertical wire former, IE, 9/30, p.93

**Tower Oil Co.:**

Case for molybdenum disulfide: Harry Simon, 12/30, p.68

**Townsend Co.:**

Organizes research group, 12/30, p.53

**Trane Co.:**

Roof ventilators, IE, 12/23, p.86

**Transcontinental Industries Inc.:**

Buys Highway Trailer, B, 12/2, p.89

**Tree Tool & Die Works:**

Vertical milling machine, IE, 12/30, p.72

**Trevor Steel Co.:**

Changes hands, B, 8/12, p.101

**Trico Fuse Co.:**

Chain roller, IE, 11/18, p.229

**Tubular Rivet & Stud Co.:**

Riveting machine, IE, 10/28, p.236

**Turner Uni-Drive Co.:**

Transmissions, IE, 12/9, p.226

**Tuthill Pump Co.:**

Pump-motor units, IE, 7/22, p.129

**Twin Disc Clutch Co.:**

Air clutches, IE, 9/9, p.138

**Tygart Steel Rolling Corp.:**

Finished steel facilities, 7/15, p.81

**U****Ulbrich Stainless Steel:**

Thin stainless, TO, 9/9, p.103

**Union Carbide Corp.:**

Builds Mexican plant, 9/30, p.55  
 FTC charge on Visking purchase, 7/22, p.52  
 Nozzles for flame cutting, IE, 7/1, p.94  
 Silicone emulsion for shell mold, IE, 11/4, p.146

**Union Tank Car Co.:**

Buys Phoenix Mfg., B, 8/5, p.84

**Union Wire Rope Corp.:**

Sold, B, 11/18, p.140

**United Aircraft Corp.:**

Hamilton moves plant, B, 7/29, p.99

**United Drill & Tool Corp.:**

Merger, Greenfield Tap & Die, 12/16, p.92

**United Engineering & Foundry Co.:**

Japanese contract, 8/26, p.64

**United States Borax & Chemical Corp.:**

Boron refinery, B, 12/2, p.86

**U. S. Chemical Milling Corp.:**

Chem-milling handles tough job, 12/2, p.114  
 Chemical milling process, IE, 10/28, p.241

**United States Drill Head Co.:**

Operations centralized, 10/14, p.70

**U. S. Electrical Motors Inc.:**

Motors, IE, 9/2, p.164  
 Variable speed drive, IE, 7/15, p.147

**U. S. Industries Inc.:**

Merges divisions, 12/16, p.90  
 Reorganizes, 10/28, p.147

**U. S. Steel Corp.:**

AS&W: No. 5 stack, daily capacity, 8/5, p.96  
 Bridge construction uses T-1 steel (Calif.), 7/8, p.57  
 Clairton Works: Coke battery rebuilt, 8/26, p.36



Cyclone Fence makes fiberglass, 9/16, p.90

Duquesne Works:  
Rolling facilities replaced, 8/5, p.83  
Slab mill contract, 9/9, p.96

Evaporograph, detector for hot spots, 8/12, p.134

Gas container, National Tube, 9/16, p.90

Geneva Works: Waste gases turn a profit: Hydrogen and nitrogen makes ammonia, nitric acid and fertilizer, 8/12, p.132

Gerrard Div. shift, 10/28, p.147

Iron ore handling, Youngstown Works, 11/4, p.71

Iron ore lease at Wyoming, Columbia-Geneva, 7/8, p.47

Oil Well Supply: Centrifugal pump line, 11/25, p.87

Price increase averages \$6, 7/8, p.54

Pricing change, tin plate, 11/18, p.243

Sintered ore handled by radar, 9/2, p.148

Tyson hits federal control on pensions, 7/1, p.45

Wider stainless sheets (king-size) on way, outgrowth of sandwich rolling, 12/23, p.92

**United States Steel Export Co.:**  
Export prices raised, 9/2, p.188  
Seamless pipe, new prices, 12/9, p.238

**U. S. Tool Co. Inc.:**  
Cradle and straightener, IE, 8/5, p.126

**Universal-Cyclops Steel Corp.:**  
Empire Steel merges with Reeves Steel to form subsidiary, 12/2, p.48; 12/9, p.141  
Vacuum arc furnace, pic., 8/5, p.83

## V

**Vanadium Corp. of America:**  
Joins ore development project (Ambrosia Lake district of New Mex.), 7/15, p.86

**Vanguard Engineering Co.:**  
Boom truck, IE, 8/12, p.152

**Van Straaten Chemical Co.:**  
Barrel finishing made simpler, 9/9, p.108

**Vanton Pump & Equipment Corp.:**  
Plastic gate valve, IE, 10/14, p.115

**Vap-R-Flux Corp.:**  
Formed, B, 10/14, p.93

**Victor Equipment Co.:**  
Expands, B, 11/11, p.95

**Victoreen Instrument Co.:**  
Buys Jordan Electronics, B, 10/14, p.101

**Virginia Steel Co.:**  
Expands, B, 12/30, p.52

**Vitro Corp. of America:**  
Molybdenum coating process, 12/2, p.93

**Volkert Stampings Inc.:**  
Forms Vidmar Inc., storage cabinets, 8/19, p.138

**Vulcan Materials Co.:**  
Buys Union Chemical, B, 9/2, p.122

## W

**Wabash Mfg. Co. Inc.:**  
Merges with Greenwood Eng., B, 8/12, p.110

**Wade Tool Co.:**  
Slide rest, IE, 12/16, p.126

**Wadell Equipment Co.:**  
Precision boring, IE, 7/29, p.156

**Wagner Bros.:**  
Buys Automatic Molding, 10/28, p.155  
Chemical stripper, IE, 8/19, p.209  
Plating process, TO, 7/22, p.99  
"Tadmu," modular buildups of plating machines, test and development, 8/26, p.38

**Wagner Electric Corp.:**  
Motor frames changed, IE, 7/1, p.94

**Wagner Mfg. Co.:**  
Buys Griswold line, B, 10/21, p.65

**Wall Colmonoy Corp.:**  
Electrode boosts gear life, 12/30, p.70  
Hard-facing alloy, IE, 9/9, p.149

**Wall Wire Products Co.:**  
Merges with Helical Tube, B, 7/29, p.104

**Wallace Supplies Mfg. Co.:**  
Cutting machine, IE, 8/19, p.209  
Rotary pipe cutter, IE, 7/15, p.150

**Wallingford Steel Co.:**  
Adds lab, B, 12/16, p.87

**Waltham Watch Co.:**  
Reorganizes, name change, B, 8/19, p.138

**Walworth Co.:**  
Ductile iron valve tests, TO, 8/19, p.149

**Ward LaFrance Truck Corp.:**  
Heating and ventilating field, 12/30, p.52

**Warner & Swasey Co.:**  
Coding heat treating data, 8/26, p.74  
College-industry program, professors conference, 7/22, p.69  
Turret lathe, 36-in., IE, 7/8, p.122  
Wire weaver, IE, 12/16, p.126  
Wire weaving machine, 11/25, p.54

**Warren Mfg. Co.:**  
Motor controller, IE, 8/26, p.95

**Waukesha Co.:**  
Buys Climax Engine, B, 12/2, p.89

**Wean Engineering Co.:**  
Japanese steel equipment contract, 8/26, p.64

**Wean Equipment Co.:**  
Coil slitter for SPS automated line, 9/9, p.122

**Webb Co., Jervis B.:**  
Flex-Bend, portable conveyor, IE, 12/9, p.213  
Buys Spanmaster Crane, 7/8, p.90

**Webb Corp.:**  
Bending roll, IE, 11/18, p.229  
Turning rolls, IE, 12/9, p.219

**Weirton Steel Co.:**  
Expansion accents productivity, annealing line, etc., 10/7, p.170  
Talent pool: This firm builds people, 11/25, p.70

**Weller Electric Corp.:**  
Centralizes, B, 8/5, p.84

**Wellman Engineering Co.:**  
Ore bridge contract, 11/25, p.87

**Weltronic Co.:**  
Arc weld control, IE, 8/5, p.118  
Positioner control, IE, 8/26, p.90

**Wesche Electric Co., B. A.:**  
Power positioning, IE, 8/19, p.212

**Wesco Tool & Mfg. Co.:**  
Tool mist, IE, 10/7, p.213

**Wesson Co.:**  
Carbide squares can be turned, redesigned to five tools, 12/23, p.77

**West Bend Equipment Corp.:**  
Portable elevator, IE, 12/9, p.220

**Western Electric Co.:**  
Columbus plant, 7/15, p.57  
How to control plant noises, screw dept., 8/12, p.138

**Western Extrusion Co.:**  
Aluminum plant, 8/12, p.101

**Western Mfg. Co.:**  
Automatic clutch, IE, 9/23, p.144

**Western Tool & Mfg. Co.:**  
Expanding mandrel aids grinding, 9/30, p.82

**Westinghouse Electric Corp.:**  
Aluminum gas welder, IE, 11/4, p.146  
Builds circuit breaker plant, Pa., 11/18, p.119  
Cresap plea for fair price (NEMA), 11/25, p.69  
Chemist reports crystals, to study failures, 11/11, p.109  
Cost - of - living increases, 12/9, p.108  
Expansion program, 8/5, p.84  
Gear line, IE, 10/21, p.103  
Magnetic steel (Cubex) easily oriented, 11/11, p.131  
Magnetic steel, 10/28, p.113  
Navy contracts for radar systems, 9/9, p.107  
Nuclear reactor, Pa., 10/7, p.114  
Plant design is flexible (Upper Sandusky), 8/5, p.110  
Sales, 12/23, p.30  
Shot peening large gears, 12/16, p.120  
Stairway plant, B, 8/19, p.113  
Vacuum heat treating takes hold: R. R. Giler, 7/15, p.108  
Weaver reports on Japan's need for atomic power, 7/8, p.59  
Zirconium contract let, 12/23, p.62

**Weston Electrical Instrument Corp.:**  
Cylindrical marker, IE, 7/29, p.158  
Recorders, IE, 9/30, p.94

**Wheelabrator Corp.:**  
Airless blast cleaner for castings, 7/8, p.114  
Blast tumbler, IE, 12/16, p.123

**Wheeling Corrugating Co.:**  
Buffalo warehouse, B, 7/29, p.99

**Wheeling Steel Corp.:**  
Automatic packaging, 7/8, p.112  
Expands at Benwood, 12/23, p.38  
Expands at Yorkville, O., 7/1, p.61  
Replacement of tin plate mill facilities, 11/4, p.124

**Whitehead Metal Products Co.:**  
Markets Shieldalloys, 9/30, p.110

**Wickes Corp., The:**  
Crankshaft automated line, 11/11, p.114  
Tracer lathes cut jet discs, 8/26, p.81

**Wickman Products Corp.:**  
Lathe—Little John, IE, 12/9, p.220

**Wiedemann Machine Co.:**  
Loader-stacker, IE, 8/26, p.89  
Template machine, IE, 12/30, p.72

**Wiesner-Rapp Co. Inc.:**  
Electronics field, B, 8/5, p.84

**Willys Motors Inc.:**  
Jeep introduced, 7/8, p.68  
Mechanical Mule contract, 7/29, p.86

**Winslow Product Engineering Corp.:**  
Vacuum foot, IE, 12/9, p.216

**Wilson Inc., K. R.:**  
Positioner, IE, 9/16, p.179

**Wiretex Mfg. Co. Inc.:**  
Sintering muffles, IE, 12/23, p.86

**Wisconsin Knife Works:**  
Buys Bailey & Blending, 12/2, p.89

**Wolcott & Associates, R. W.:**  
Organized, B, 10/21, p.68

**Wolverine Tube: See Calumet**

**Wood Co., John:**  
Moves plant, B, 12/2, p.86

**Wood Shovel & Tool Co.:**  
Buys Geyer Mfg., B, 7/1, p.62

**Worcester Pressed Steel Co.:**  
Annealing furnace, B, 8/12, p.104  
Drawability of titanium defined, 12/9, p.179  
Paint line mechanized, 7/29, p.99

**Wright Tool Co.:**  
Inspection bench, IE, 9/30, p.96

## X Y Z

**Yale & Towne Mfg. Co.:**  
Fork lift trucks, IE, 7/1, p.89; 10/21, p.107; 11/4, p.162; 11/11, p.152

**Young Industries of Canada Ltd., L. A.:**  
Buys Canadian Auto Trim, 12/23, p.63

**Young Spring & Wire Corp., L. A.:**  
Buys Link Radio, B, 10/7, p.155  
Buys Utility Metal, 11/18, p.140

**Youngstown Research & Development Co.:**  
Organized, B, 10/21, p.65

**Youngstown Sheet & Tube Co.:**  
Earnings, 9 mos., 10/21, p.31  
Indiana Harbor Works expands: Tin plate, temper mill, seamless tube mill, 8/12, p.78  
Merger reasons presented, 9/23, p.79  
Open hearth rebuilt: Burning gas on top of checkers speeds light-up, 8/19, p.158  
Seamless tube mill opens, 9/16, p.91

**Zagar Inc.:**  
Transfer machine, IE, 7/1, p.91



# AUTHOR INDEX

## A

**Agnew, Charles E.**, Consultant, Maintenance of equilibrium in blast furnace operation, 7/29, p.120; 8/5, p.96

**Assel, Walter J. and W. B. Leyda**, Ohio Seamless Tube Div., Copperweld Steel Co., How to get more from a spheroidizing furnace, 12/9, p.208

## B

**Bender, E. A. and H. J. Gilliland**, General Motors Corp., New way to measure quenching speed, 12/30, p.56

**Berger, Dr. J. Alfred**, University of Pittsburgh, and **W. L. Keene**, A new stainless for atomic energy, 9/9, p.104

**Briggs, J. Z.**, Climax Molybdenum Co., and **R. R. Freeman**, How to weld molybdenum, 7/8, p.101

**Bulloch, Charles E. and Forrest Nelson**, A. O. Smith Corp., What glass can offer metal, 8/19, p.154

**Byrom, R. D.**, Ford Motor Co., CO safety stressed, 7/29, p.140

## C

**Campbell, George J.**, Bethlehem Steel Co., Prepared annealing atmosphere, 11/18, p.160

**Chester, Daniel R.**, Archer-Daniels-Midland Co., Air setting speeds coremaking, 7/22, p.120

**Crouse, Howard E. and E. C. Wallace**, New York Air Brake Co., Modified martemp cuts warping, 12/2, p.97

## D

**Driear, Joseph R.**, Eaton Mfg. Co., Choosing valve materials, 12/9, p.161

## E

**Ekey, D. C. and E. G. Vogel**, Lebanon Steel Foundry, Faster CO<sub>2</sub> cores, 9/2, p.150

## F

**Freeman, R. R.**, Arc-Cast Molybdenum Development, and **J. Z. Briggs**, How to weld molybdenum, 7/8, p.101

## G

**Giler, R. R.**, Westinghouse Electric Corp., Vacuum heat treating takes hold, 7/15, p.108

**Gilliland, H. J. and E. A. Bender**, General Motors Corp., New way to measure quenching speed, 12/30, p.56

## H

**Haddock, J. L.**, Wolverine Tube Div., Calumet & Hecla Inc., Making packages better, cheaper, 12/23, p.80

**Hauser, E. R.**, Metalplate Co., How to cut galvanizing costs, 7/8, p.108

**Heestand, W. E.**, Alliance Structural Co., and **Paul H. Lessard**, Welding solves down time problem, 8/12, p.144

**Hoppin III, G. S.**, General Electric Co., Brazing for high temperature use, 8/26, p.82

## K

**Kaftol, Philip**, Van Straaten Chemical Co., Barrel finishing made simpler, 9/9, p.108

**Keene, W. L.**, Superior Steel Corp., and **Dr. J. A. Berger**, A new stainless for atomic energy, 9/9, p.104

**Kerber, H. R.**, Carborundum Co., Mechanization cuts slab grinding cost, 9/2, p.138

## L

**Laux, Leon E.**, Martin Co., Making tape control work, 11/18, p.182

**Lessard, Paul H.**, Industrial Forge & Steel Inc., and **W. E. Heestand**, Welding solves down time problem, 8/12, p.144

**Leyda, W. B. and W. J. Assel**, Ohio Seamless Tube Div., Copperweld Steel Co., How to get more from a spheroidizing furnace, 12/9, p.208

**Linnert, George E.**, Armco Steel Corp., How to avoid trouble with stainless welds (Part 2), 7/1, p.70

## Mc

**McFadden, C. A.**, Selas Corp. of America and **R. S. McFall**, Austempering is mechanized, 9/23, p.125

**McFall, R. S.**, International Business Machines Corp. and **C. A. McFadden**, Austempering is mechanized, 9/23, p.125

**McFee, W. E.**, Armco Steel Corp., Pickling stainless to remove scale, 11/25, p.103

**McNairn, John S.**, Ford Motor Co., Chemical capping cuts drawing rejects, 8/26, p.76

## M

**Miller, Howard E.**, Republic Steel Corp., Single stack annealing gets the nod, 11/11, p.118

## N

**Nelson, Forrest and C. E. Bulloch**, A. O. Smith Corp., What glass can offer metal, 8/19, p.154

## R

**Raedy, Tom**, Associated Spring Corp., Vacuum heat treating hairsprings, 10/21, p.94

**Reid Jr., Harry F.**, McKay Co., Electrode quality depends on coating, 9/30, p.83

## S

**Salz, Leon**, Magnus Chemical Co. Inc., Choose the right lubricant, 10/14, p.132

**Simon, Harry**, Tower Oil Co., Case for molybdenum disulfide, 12/30, p.56

## V

**Vandenburgh, Frank H.**, Mallory-Sharon Titanium Corp., Titanium production surges ahead, 7/29, p.152

**Vogel, E. G. and D. E. Ekey**, Lebanon Steel Foundry, Faster CO<sub>2</sub> cores, 9/2, p.150

## W

**Walker, C. D. and R. S. Zeno**, General Electric Co., Ductile Iron: How heat treatment upgrades it, 9/16, p.132

**Wallace, Edgar C. and H. E. Crouse**, New York Air Brake Co., Modified martemp cuts warping, 12/2, p.97

**Wambold, James W.**, Superior Tube Co., Lab organization for complex specs, 11/18, p.208

**Winkler, A. L.**, Martin Co., Tips on titanium milling, 10/7, p.176

## Z

**Zeno, R. S. and C. D. Walker**, General Electric Co., Ductile iron: How heat treatment upgrades it, 9/16, p.132



